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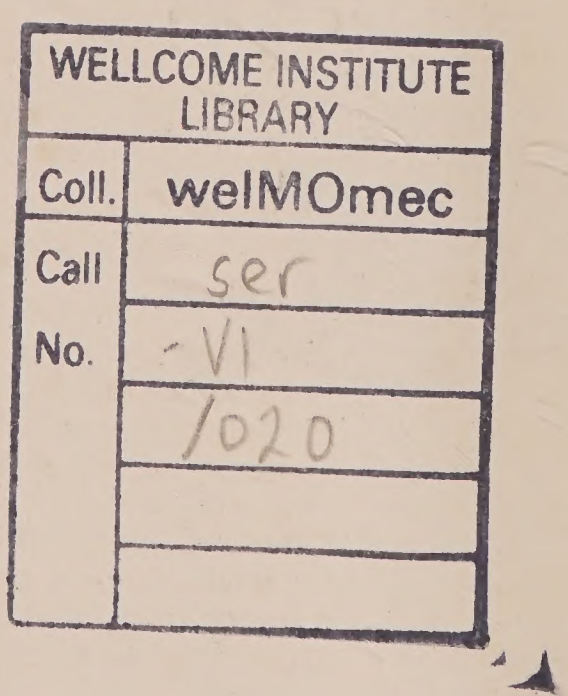

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Annals of Comparative Pathology.

JULY, 1888.

PRELIMINARY NOTE ON THE SURGICAL CURE FOR ROARING DUE TO LARYNGEAL PARALYSIS.

BY FRED SMITH, PROFESSOR, ARMY VETERINARY SCHOOL, ALDERSHOT.

THE question of the surgical treatment of Roaring is every day becoming more urgent. The public look to us to be able to do something, particularly at a time when we are anxious to impress upon them the value of our services to the State, and our desire for recognition as a scientific body.

This preliminary note, the outcome of Mr. Hopkin's excellent paper in last month's issue of the Journal, starts with the hypothesis that *Roaring, due to Laryngeal Paralysis, can be cured by operation*, and shows that another prevalent disease, involving the loss of thousands of pounds annually, will, in all probability, be brought within the category of curable affections.

The first attempt at surgical cure was made by Günther, of the Hanover Veterinary School, who proposed and practised excision of the Arytenoid cartilage. The operation as performed by him is exceedingly severe; so much so, that in the only case on which I saw it performed (not by Günther), the patient died within two or three days. The objection to the operation was its severity, the mutilation involved, and the chances of the food passing into the air passages. We may at once banish the two first objections, for we can perform the operation without mutilation; the last objection is not a real one, for horses will swallow both liquid and solids perfectly, after partial excision of the arytenoid cartilage has been practised. If, on the other hand, the whole cartilage be removed, there is nothing to prevent food falling into the trachea, and such an operation would be unwarrantable, and, moreover, useless.

The operations which I have to describe have been devised according to the views taken of the pathology of the disease, and

the cause of the sound. Dr. Fleming regards the sound as produced by the relaxed vocal cord on the paralysed side. For my own part, I feel convinced that the greatest noise is produced by the arytenoid cartilage on the paralysed side hanging over the opening of the glottis; the more the glottis dilates on the sound side, the more the paralysed and depressed portion is drawn towards the central line.

We may banish the German method of extra-laryngeal operation from our consideration, for we may at once say that all our operations are to be performed intra-laryngeal, either through the crico-thyroid ligament, or through an incision into this ligament, the cricoid cartilage, and the crico-tracheal ligament. This advantage over the operation of the German school will be at once manifest. The mutilation is avoided, the hæmorrhage is insignificant, and we can at once attack the affected part. The suggestion was Dr. Fleming's.

In my earlier operations I worked only through the crico-thyroid ligament; everything had to be done by the sense of touch, and the difficulties of operation were great, owing to the narrow and cramped space. Now, I advise a free and extended incision through the crico-thyroid ligament, cricoid cartilage, and crico-tracheal ligament, exposing the whole interior of the larynx, and leaving ample room for work and manipulation. Moreover, with an incision of this kind the interior of the larynx can be illuminated daily by means of a mirror, and thus the condition of affairs known. For this purpose the external wound must not be allowed to close until we are satisfied with the results of the operation.

The following operations may be performed to remove the noise caused by laryngeal paralysis:—

1. Excision of the left vocal cord, an operation which in this paper will be known by the name of its originator, viz., Fleming.

2. Partial excision of the arytenoid cartilage (performed intra-laryngeal), and complete removal of the left vocal cord.

3. Opening the crico-arytenoid articulation through an incision into the larynx, mechanically raising the arytenoid cartilage and retaining it up, until anchylosis has occurred.

When I commenced to write this notice, I believed that I was first in the field with this operation, but Dr. Fleming tells me that one of Dr. Moeller's (Berlin Veterinary School) operations is to immobilise the arytenoid cartilage.

4. Excision of the inferior face of the larynx, removal of muscle and a portion of cricoid cartilage, and establish a large and permanent fistula into the air passages at a place where it is out of sight.

I will describe in detail each of these operations. First, with

regard to the position of the animal; after being cast in the usual manner the legs should be raised in the air by the rope on the hobbles passing through a block; the limbs should be perfectly vertical, so that the patient is resting on the spine; the head is now extended, and the whole laryngeal region is most perfectly exposed. The hair having been clipped close, the finger endeavours to feel for the cricoid cartilage or crico-thyroid ligament. This is a very difficult matter in animals which have the sterno-thyroid muscle well developed; but if the head be slightly raised, and the neck made less tense, the part may perhaps be defined. As a surgical landmark, take the parotid edge of the inferior maxilla; a line drawn along this to the larynx is just opposite the crico-thyroid ligament; fix and steady the part, and make a longitudinal incision through the skin exactly in the central line, and carry it as far as 2 inches. Next make an incision in the sterno-thyroid muscle, tearing, rather than cutting, its fibres so as to avoid hæmorrhage as much as possible. Observe that the incision in this muscle corresponds in size to that made in the skin. Some tissue, including fat, will now be felt covering the face of the larynx; the finger should carefully examine the part, making out the crico-thyroid ligament, cricoid cartilage, and crico-tracheal ligament in turn; clear all the tissue away until the above ligaments and cartilage are exposed, but on no account open the larynx until all the hæmorrhage has stopped (tying or twisting small spirting vessels with this object); for blood passing into the larynx is very obstructive to further work.

The larynx is now opened by a longitudinal incision, extending from the thyroid cartilage to the trachea (taking care not to damage either of these structures), and the wound is held apart by good retractors.

No matter what the operation is that we are going to perform, this method of opening the larynx will hold good. The various operations will, therefore, be described from the time the larynx is opened, and the edges of the wound drawn well apart.

Fleming's operation.—Excision of the left vocal cord.

The operator kneeling on the off side of the patient, places the

FIG. 1.

left fore-finger in the left ventricle of the larynx, and by means of a peculiar curved needle (Fig. 1) held in a vertical position, with the

back of the operator's hand towards his face, transfixes the vocal cord about midway between its attachments; the handle of the needle is now depressed so as to touch the sides of the patient's neck, when the point of the needle, from its peculiar curve, turns up towards the operator, and a piece of silk being placed in the notch, the needle is withdrawn by reversing the movements which introduced it. We have now complete command over the cord, and the ligature being tightened, a blunt-pointed hernia knife is introduced at the wound made by the needle, and, cutting upwards, the cord is divided from its thyroid attachment. We now cut downwards until we get to the cartilaginous process of the arytenoid, to which the cord is attached, and, by exercising traction on the ligature, this portion is drawn upwards and snipped off with a pair of curved scissors (Figs. 2 and 3). The operation is now com-

FIG. 2.

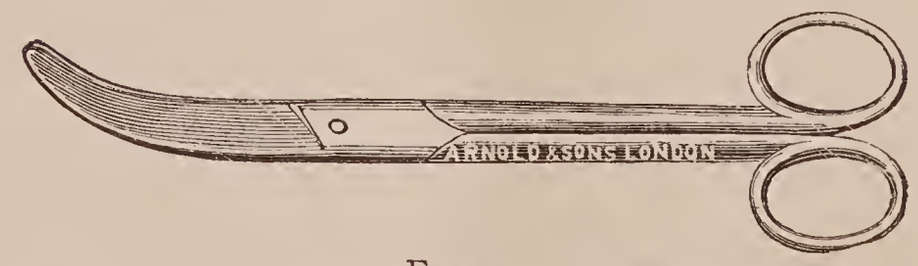

FIG. 3.

pleted. There is considerable destruction of mucous membrane, and the thyro-arytenoideus muscle is exposed. To avoid the former, I would recommend an incision through the mucous membrane in the length of the cord, and to dissect this back in flaps before passing the needle under the cord, so as to expedite the healing process and avoid *contraction* of the larynx. In the same way, spare the mucous membrane covering the vocal process of the arytenoid, as far as possible, by stripping it off before excising the cartilage. If the mucous membrane is to be saved (and *I strongly recommend it*), clean the part with scalpel and forceps before attempting excision. The loose flaps will, in the process of healing, fall back into their proper place.

The hæmorrhage is insignificant; washing out the larynx through the wound *while the head is depressed* will stop the bleeding. The after-treatment consists in washing out the larynx (if

the patient will submit to the operation), and examining the part

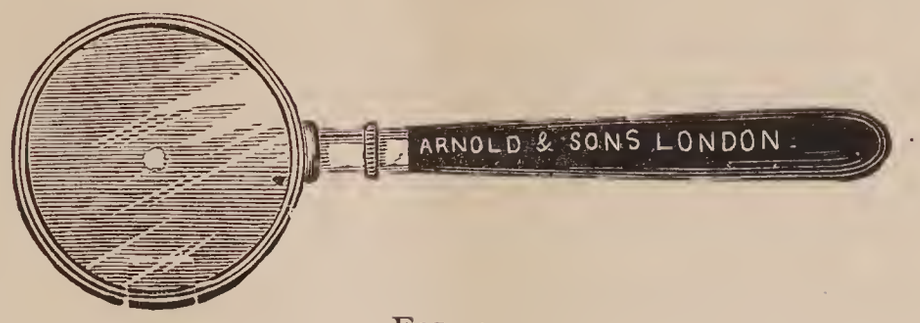

FIG. 4.

daily with a mirror, or laryngoscope (Fig. 4), with an object, and in a manner, to be afterwards described.

Partial Excision of the Arytenoid Cartilage.

This operation is more difficult than the last. Pass the left forefinger into the left ventricle of the larynx, and with the second finger of the left hand draw the anterior portion of the arytenoid towards you, and divide with scissors the portion of mucous membrane which attaches the lateral face of the arytenoid cartilage to the epiglottis and thyroid cartilage. This is the first incision, and it must be carried down from about one-half to three-quarters of an inch, keeping close to the arytenoid cartilage. Now, with a blunt-pointed knife, divide for not more than a quarter of an inch, one arytenoid from its fellow, at the anterior part, through the central line. Next, apply the laryngeal forceps (Fig. 5), getting a

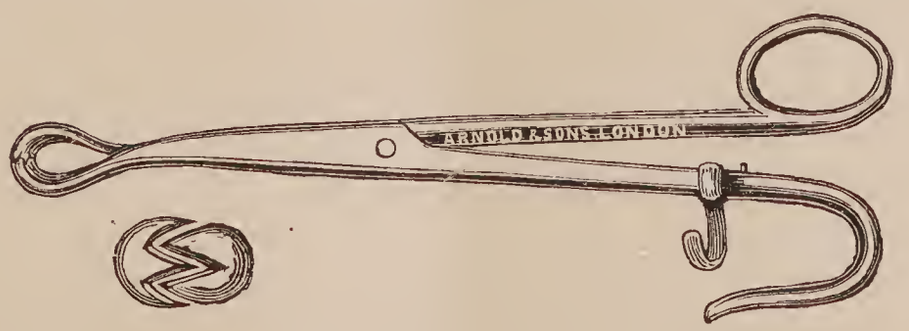

FIG. 5.

good hold of the cartilage pull it towards the operator, which has the effect of raising it, and with a stout pair of scissors cut through the arytenoid cartilage obliquely from above downwards and forwards, commencing the incision as far back as the ventricle of the larynx. This is the second incision.

The next step is to go through the manœuvre of removing the mucous membrane from the vocal cord and cartilage, and to excise the cord as described in Fleming's operation. The cartilaginous attachment is, however, dealt with differently; it is separated deeply from the side of the larynx until perfectly free; it is then, with peculiarly curved stout scissors (Fig. 2), completely excised

from the roof of the larynx, the incision being carried directly forwards and meeting the second incision about midway through the cartilage. This is the thickest portion of structure to cut through.

The only portion of the arytenoid now left is that surrounding the cricoid articulation ; its cut edge should present two facets, which are nearly in the one plane.

To recapitulate, the steps of the operation are four. See Fig. 6.

1. Divide the mucous membrane attaching the arytenoid to the epiglottis and thyroid. Incision 1 Fig. 6.

2. Divide obliquely downwards and forwards the anterior half of the arytenoid cartilage. Incision 2 Fig. 6.

3. Excise the vocal cord, sparing the mucous membrane. Incision 3 Fig. 6.

4. Complete the removal of arytenoid, cutting forward close to the roof of the larynx, and joining the first incision. Incision 4 Fig. 6.

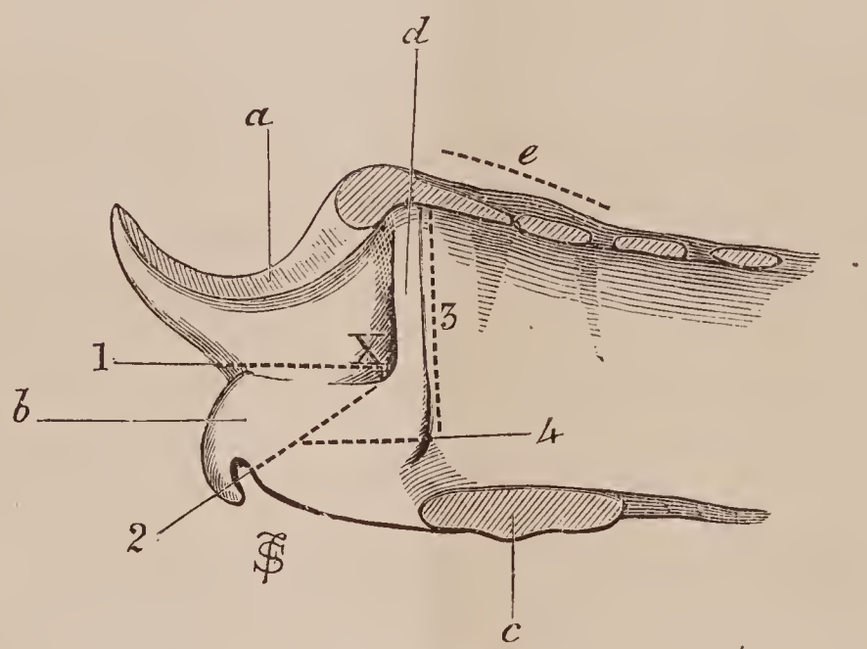

FIG. 6.

Section through the larynx in the operating position, showing the lines of incision.
a—Epiglottis.
b—Arytenoid cartilage.
c—Bezil of cricoid cartilage.
d—Left vocal cord.
e—Line of incision for opening the larynx.
1—Dotted line shows the 1st incision for removing the arytenoid cartilage.
2— ,, ,, ,, 2nd ,, ,, ,, ,,
3— ,, ,, ,, 3rd ,, ,, ,, ,,
4— ,, ,, ,, 4th ,, ,, ,, ,,
x—The ventricle of the larynx.

Wherever mucous membrane can be spared, save it just as one saves skin, etc. ; removal favours contraction of the larynx. If the whole of the operation could be performed after the mucous membrane had been carefully stripped off, so much the better.

After the operation, wash out the larynx; treat as an ordinary wound; examine daily with a mirror. No danger need be apprehended of food going down the wrong way; *it does not occur.*

Opening the Crico-Arytenoid Articulation.

This articulation is found on the roof of the larynx, close behind the vocal process of the arytenoid cartilage. Feel for the depression in the roof of the larynx in the central line where the cricoid and two arytenoids meet; the articulation is about half an inch to the right of this, and slightly behind it; it is close up against a little projection on the vocal process of the arytenoid cartilage on the roof of the larynx. Move the cartilage to and fro, and the joint may be indistinctly felt. Make an incision through the mucous membrane about a quarter of an inch long, the incision being carried slightly backwards. Now introduce, in a forward direction, a narrow-bladed but stout knife, and work to and fro two or three times, not cutting more than a quarter of an inch deep; now put the knife in again in the same direction, and, keeping the blade in its place, raise the hand and press the handle of the knife forwards; the point of the blade should now look backwards, then cut as before.

The first step opens the joint, the second gets deeper into it (which is here of very peculiar shape), and effectually opens the articulation on the upper surface of the cricoid cartilage.

The operation is now completed; it only remains to fix on to the cartilage an arrangement by which it can be propped up and kept in its place, with the left side of the glottis widely dilated. This can be done with an Assalini's tenaculum, fixing it on to the arytenoid at the anterior part, above the vocal cord; place a stout wire suture through the anterior commissure of the wound, for the purpose of tying the handle of the tenaculum to, and so keeping it a fixture. The propping-up need not be done until the following day. The tenaculum being then obliquely across the wound, the handle on the right side, press upwards and outwards and tie the handle in its place, through the wire suture.

Of course this method is a rough-and-ready one, but I hope to have shortly a more refined procedure by means of a screw which can be accurately adjusted; or else to keep the glottis dilated (and so the arytenoid raised), by means of an indiarubber ball which can be inflated at will.

Excision of the Inferior face of the Larynx or partial Laryngectomy.

The fourth operation to be described is devised as a last resort when all others have failed. It consists in making a large fistulous opening into the larynx, to be kept permanent. In

other words, it is to be a *laryngectomy* instead of a tracheotomy, and will have the following advantages over the latter: (1) It will be very much larger than any tracheotomy could be performed; (2) It is completely out of sight, and thus no eyesore. These advantages are so great as to need no further comment; but I would distinctly state that this operation should only be adopted when all other means have failed.

The patient being in the position originally described, mark with a piece of chalk on the neck the outline of the portion to be removed.

Arrange this so as to include the whole thickness of the sterno-thyroid muscle—a space, in fact, of two inches in diameter, both longitudinally and transversely. Make the usual longitudinal incision in the skin over the crico-thyroid ligament, cricoid cartilage, and crico-tracheal ligament, and selecting one half, cut away both muscle and skin for at least an inch all round, and serve the opposite side the same. The muscle will retract considerably, and go out of sight. Now carefully clear away all the tissue covering the parts above-named, until a space the size of a racket ball over the larynx is exposed. The next step is to carefully excise two inches of the ring of the cricoid cartilage, viz., one inch on either side of the central line. This must be done with care, so as to avoid opening the larynx. Nothing now remains but the ligaments in question and the mucous membrane. Stop hæmorrhage by tying all vessels, etc. The first stage of the operation is now completed, and one of two things may be done; either to finish the operation, or, what I should be inclined to advise, to leave matters as they are for a few days, until the swelling which will appear has subsided, and the edge of the wound is granulating. Whichever course it is determined to pursue, the second stage of the operation consists in opening the larynx by making two incisions through the ligaments and mucous membrane. The first incision is longitudinally from the thyroid cartilage to the first ring of the trachea; the second is horizontal, parallel with the ring of the trachea from the cut extremity of the cricoid cartilage on one side to that of the other. This will leave two flaps of mucous membrane, which must now be stitched to the edges of the wound by means of a fine needle and catgut or silk. Into the opening now made in the larynx, a racket ball could easily be introduced. The operation is finished. Our wishes are to get the mucous membrane to become united to the edges of the wound, and that is the reason why I should prefer opening the larynx when the wound is granulating. The flaps of mucous membrane will be found much swollen next day, therefore, the sutures should not be drawn too tightly. If we find union will not occur, the

flaps break away from their attachment, and show a disposition to curl in or come together again, remove them entirely with a blunt-pointed knife, cutting close to the edge of the cartilages.

Do not be afraid of cutting away too much tissue, for contraction of the wound is sure to occur to a certain extent.

If the operation is done as I have described, it is quite impossible to see the wound with the animal's head in the ordinary position ; it can only be seen by looking up, or by depressing the head.

Throughout the three first operations, it is essential to keep the wound in the larynx open until we are satisfied that the healing process within is completed. This is accomplished by a plug of wood, the size and shape of the wound, secured to the neck by two tapes ; and to prevent it coming out, it is tied on either side to the cheek-piece of the head-collar. The plug requires daily cleansing, and should be made of hard wood if possible. The wound can now, if necessary, be kept open for weeks. I think that a celluloid plug would be best, and this can easily be obtained of the required shape from a surgical-instrument maker.

If I adopt the inflated ball to support the cartilage, it will then be necessary for the patient to wear a tube in the larynx. Experience may show that it is best to keep the wound in the larynx, under all circumstances, patent with a tube rather than a plug.

The interior of the larynx must be illuminated daily either with a hand glass or else a proper mirror (Fig. 4). What we have to look for in particular *is any sign of growth from the cut edges of the cartilage;* these growths are exceedingly rapid, and soon assume the size of a walnut ; they are composed of cartilaginous tissue, and even bony material. On their first appearance they must be checked, and the best application is an alcoholic or watery saturated solution of the solid chloride of zinc, or a saturated solution of silver-nitrate. This must be applied to the growth with a camel-hair brush or a piece of tow on a probe. Care must be taken not to fill the brush or tow, and to give it a shake before putting it into the larynx, so as to prevent it running down the side. Daily applications may be necessary until the tendency to form a tumour is checked. The caustic can be applied most accurately by illuminating the larynx and holding the edges of the wound apart, the patient's head being of course raised.

It is this tendency of the cut cartilage to form a tumour which constitutes the real difficulty in curing Roaring ; if the growth has been allowed to assume large proportions it is best to remove it by operation with a pair of stout scissors. It will recur unless checked.

Spare the mucous membrane of the larynx as much as possible, or else contraction of one side will ensue during the healing process, and thus the calibre be considerably reduced, which will render the operation futile. It is for this reason that I regard propping up the arytenoid cartilage, and forming an anchylosed joint, as the operation of the future. This operation was devised from the knowledge obtained in previous cases of the rapid development of cartilaginous and bony material.

Lastly, after opening the larynx, before attempting anything further, make sure the case is one of laryngeal paralysis. If *both* vocal cords are seen moving, either in breathing or when the animal is made to swallow by touching the glottis with the finger, and the left arytenoid cartilage, instead of being *quite motionless,* is moving up and down, attempt nothing further; the cause of the roaring does not lie in the larynx.

Whatever subsequent benefit to the profession these notes on laryngeal surgery may be, the credit must be given to Dr. George Fleming, under whose immediate superintendence some of the operations have been performed, and through whose professional enterprise the inquiry has been undertaken.

Some of the statements made by me may, in the light of more prolonged experience, require modification. It is perfectly obvious that we are only at present finding out our difficulties, and the best way of overcoming them. We must not expect immediate and perfect success to fall to us; such has never been the case in the early history of any operation. Ovariotomy, for example, was thirty years ago deemed an unwarrantable procedure, owing to the dreadful mortality attending it; it is now daily and successfully performed, and the same may be said of abdominal section.

I must express my best thanks to Messrs. Arnold for their courtesy and the patience they have bestowed on the manufacture of these and other instruments.

SUPPOSITORIES FOR VETERINARY USE.

BY FRANK W. SOMERS, M.R.C.V.S., LEEDS.

HAVING noticed the benefits derived on many occasions from the use of morphia and other medicinal agents in the form of suppositories, as used in human practice; and having had many opportunities of witnessing the immense pain controlled, and relief given to animals by morphia in the hypodermic form, etc., I ventured some time back to give suppositories a trial in veterinary practice, in hopes that they would be found a ready means of using morphia and other drugs, and in some cases preferable to using the hypodermic form.

I was also hopeful that it would bring into more constant use those class of drugs which tend to alleviate animal suffering, of which every practitioner sees so much, and particularly in acute intestinal diseases; that they would be an addition to the veterinary pharmacopœia, and that they would also be very readily applied, since it is an easy matter to introduce a suppository through the anus into the rectum. To my mind, there is nothing in veterinary practice so satisfactory to the patient, to the client, and to the practitioner, as the hurried visit to see an animal which is suffering intense pain, and such pain entirely antagonized and relieved by the application of certain drugs, etc. This is done daily, and in our midst, and with very little trouble. I have found morphia suppositories to have very good effects in some very distressing cases. I do not wish to suppress in any way the use of other forms of drugs, because I have seen the morphia used in the subcutaneous form with the most eminent success; but I desire to say that the use of suppositories would be of great assistance in many ways to practitioners. Clinical experience has shown that morphia possesses the anodyne and soporific powers of opium, and gives to the drug most of its valuable properties. Since the subcutaneous method of administration has become general, the use of morphia to alleviate pain and spasm has become much extended. The constitutions of animals differ so much—and I have come across those animals whose idiosyncrasy is such as to render them peculiarly susceptible to the influence of both morphia and atropia. I have no wish to dilate upon the actions of drugs, as most members of the profession are well acquainted with such, but after using suppositories with such successful results, I do not hesitate to suggest and recommend them. Through the courtesy and kindness of Messrs. John Richardson and Co., wholesale chemists, Leicester, who are manufacturing this form of drug at my suggestion, I have been supplied with suppositories containing morphia and atropine. Some I have used in combination, and some separately. The following I have found to be of great service :—

Suppositories of Morphia muriate 1½ grains + atropine ½ grain.
" " " 2 grains + atropine ½ grain.
Suppositories of Morphia alone in 2, 3, and 4 grain doses.

I have used the above in several cases in my own practice, and also in the practices of several professional friends. The following cases are most suitable : Intestinal diseases generally, particularly Flatulent and Spasmodic Colic, Impaction of the Colon, Enteritis, and all those acute diseases where pain can be counteracted by their use. I have used suppositories of the morphia and atropine, combined,

with great success in cases of Tetanus, and I can specially recommend them, as the insertion of a suppository causes no disturbance whatever to the animal—an important feature to be remembered. As yet my experiments have been confined to horses, and I have given doses according to the size, age, and condition of the animal. In some very heavy, coarse horses, two or three suppositories may be inserted, and more or less as the constitution allows. Other drugs might be used in the same manner, viz., physostigmine, etc. I hope that the members of the veterinary profession will give suppositories a fair trial, and I feel sure that their efforts for the benefits of animals will be attended with satisfactory results.

The suppositories are conical in shape, the apex being blunt; their length is about $1\frac{1}{4}$ inch, and $\frac{5}{8}$ths inch at their base.

FRACTURE OF THE OSSA SUFFRAGINES OF BOTH FORE LIMBS.

BY J. B. SAVAGE, M.R.C.V.S., 5TH LANCERS, ALDERSHOT.

THE following case may be of interest to some of the readers of the valuable VETERINARY JOURNAL.

On the 7th June last, whilst the troops were charging across the sandy Long Valley, troop horse F 40, 5th Lancers, became suddenly lame in both fore without falling, pecking, or stumbling. The man riding of course dismounted, and in course of time the mare was brought into barracks in a horse ambulance, and at once put in slings. Most intense pain was evinced; with a quivering of the body she would throw her weight back on the hind legs, whilst the fore feet were thrust forward, as if suffering from acute Laminitis. The near fore pastern was swollen a little in front, whilst the off fore fetlock and pastern was tumefied all round. On manipulation crepitus from the suffraginis, off fore, could now and then be detected, the sound being masked to a great extent by the swelling. The suffraginis of the near fore simply was very painful to the touch, in the median line in front, and just below the fetlock joint, and would not give forth any crepitus.

On the animal being destroyed, the following appearances were noted—most extensive hæmorrhage into the loose tissue around the off fore fetlock and pastern, but which was not nearly so marked around those joints of the near fore.

Right Metacarpus.—From a spot, the size of a sixpenny piece, on the outer half of the lower extremity of this bone, the cartilage of incrustation was entirely removed, leaving a cup-shaped cavity

—the bone showing being of a pale pink colour. The median ridge was deeply and roughly furrowed in its middle, from its anterior to its posterior extremity—just as if it had been hacked with a blunt, narrow-pointed searcher—the result of contact with the edges of a fracture of the suffraginis to be noted hereafter.

Right os Corona.—On the upper face, a little behind the central line, and running across the bone towards the lateral faces, was a red-coloured streak, three-quarters of an inch long and a quarter broad—evidently extravasated blood beneath the cartilage.

Right os Suffraginis.—This was completely split in two, into right and left halves, the fracture extending from its upper to its lower face in an antero-posterior direction, in the median line, vertical at the upper two-thirds of the bone, but inclining obliquely outwards and downwards at the lower third, and reaching the inferior extremity of the suffraginis about the centre of the outer facet.

The outer, or right half of the bone, was also divided into two by a vertical fracture running from the centre to the lateral face. Four small detached pieces of bone were also found.

There was most extensive hæmorrhage into the substance of the inferior sesamoid ligaments, these presenting the appearance of pieces of white string stretching here and there through a dark purple mass of coagulated blood.

Left Metacarpus.—This showed two grooves running in an antero-posterior direction on the median ridge, where the cartilage had been removed through contact with the edges of a fracture in the os suffraginis.

Left Os Suffraginis.—There was considerable hæmorrhage into the inferior sesamoid ligaments, particularly marked in the deeper sets of fibres ; a vertical fracture extending from before to behind, and from the median groove straight down the centre of the bone to its middle, whence it inclined obliquely outwards and downwards to the outer facet of the lower extremity. These two lateral halves were firmly held together by periosteum and ligamentous structures.

Now it is to be remarked that this horse, previous to suddenly falling lame, *is said* not to have made any false steps, nor fallen either before or after the injury, although going at the gallop with 19 to 20 stone up. It is a marvel that she did not roll head over heels.

I was struck not only by the fact of both suffragines being broken, but their direction being symmetrical, viz., first straight down and then inclining outwards.

ACUTE RHEUMATISM FOLLOWED BY TETANUS.

BY GEORGE HOWE, M.R.C.V.S., BUXTON.

In the autumn of last year I was requested to attend a valuable cart mare, the property of a gentleman in this neighbourhood, which I found to present symptoms of acute Rheumatism, associated with cardiac mischief. After treatment for a few days the mare was able to perform a little light work, but her improvement was only of a temporary nature; for in about four or five days after commencing work she again fell suddenly lame in the opposite limb to that which suffered in her first attack. From the metastatic nature of the lameness and other symptoms I did not give much hopes of her ultimately doing any good, a prognosis which was fully corroborated subsequently by the animal's death and *post-mortem* examination. However, the mare became again apparently convalescent and was put to light work, when the attendant noticed that there was rather an abnormal flow of saliva from her mouth, and that she appeared somewhat stranger than usual in her manner.

After careful examination I had no hesitation in pronouncing the case as one of Tetanus, and endeavoured to ascertain the cause, but in vain.

Prompt measures were at once adopted to check the progress of the disease, but the animal in a few days succumbed.

The *post-mortem* examination revealed nothing abnormal, except that in the right side of the heart there was a large solid piece of fat which nearly filled both auricle and ventricle. Wondering whether this could possibly be the cause of the tetanic symptoms, I sent it to Professor Williams, who kindly replied that it was a clot which had undergone fatty metamorphosis, but whether it was the cause of Tetanus he could not say, as the pathology of that disease was at the present time so very obscure.

Mr. Darwell, senior, M.R.C.V.S., of Northwich, who was on a visit to Buxton, kindly saw the case, and fully confirmed my diagnosis and treatment.

I fear it will be thought that this is one of those cases hardly worth recording in the Journal, but I have often wondered whether or not this clot—evidently a sequel of previous rheumatoid attacks—could be the cause of this tetanic attack.

One of our leading medical authorities states that human beings will, after suffering from Rheumatism, occasionally become hemiplegic, paraplegic, or choreic, or even suffer from tetanic spasms with Trismus.

PITYRIASIS AND LEUCODERMA.

BY W. S. ADAMS, M.R.C.V.S., A.V.D., HOSUR, INDIA.

DURING the months of March and April last I had five well-marked cases of "Pityriasis" under treatment. All showed the characteristic symptoms of the disease, which varied in intensity in different cases.

It commenced in a small confluent papular eruption, generally diffused throughout the whole surface of the skin, from the coronets to the muzzle and croup. The surface temperature of the skin was very high, and it was very tender, the slightest rub causing an abrasion. The general health of the animals seemed to be but little interfered with, though in each instance the visible mucous membranes were of a bright-red colour. In all there was more or less loss of hair, and in each case there was the characteristic copious desquamation of epithelial scales. In one case the irritation was intense, though it was considerable in the others.

These cases occurred at a time when the weather was extremely hot and dry, and the horses were commencing to shed their coats. Three of the horses were of the heavy draught class; the others were lighter horses.

The treatment adopted was the same in each case. A purgative was given at once, any abrasions were treated with zinc lotion, and parts were washed with soda.

I subsequently gave liquor arsenicalis, and exercised the horses to promote the healthy action of the skin. All did well with one exception (which will be related hereafter); the coat came off, and as the new one grew, the skin regained its normal appearance, and the desquamation of dandruff gradually ceased.

REMARKS.—Some time ago I recorded a case of Pityriasis in the *Quarterly Journal of Veterinary Science* in India. I then said I was guided in my diagnosis by Dr. Lieving's work on the diagnosis of skin diseases, in which the guides to the differential diagnosis of Pityriasis rubra are given as follows: (1) Its universal or nearly universal character; (2) the extreme redness and tenderness of the skin; with (3) the excessive exfoliation of thin plates or scales of epidermis; (4) the absence of thickening or infiltration in the true skin, which distinguishes it from Psoriasis; and (5) the absence of any moist exudation, which distinguishes it from ordinary Eczema.

In following each of these points *seriatim*, we find: 1st, The universal character; 2nd, The redness of the skin is of course not recognisable, but the bright red colour of the visible mucous membranes was very remarkable; extreme tenderness of the skin

was noteworthy in each case, the slightest scratch causing a sore ; 3rd, the excessive exfoliation of thin plates orscales of epidermis ; 4th, the absence of thickening or infiltration of the true skin. After the first eruption had passed off, in no case was there any such thickening or infiltration, although there was subcutaneous œdema ; 5th, the absence of any moist exudation, except where the tender skin had been abraded.

Remarks.—These cases occurred, as I have said before, at the time the horses were commencing to shed their coats. This natural process was, I think, interfered with by the extreme heat and dryness of the weather causing unhealthy action of the skin, and was the real cause of the subsequent attacks of Pityriasis. All instances were mild in type, and in no case was there any tendency to assume a chronic form.

"Leucoderma," or White Leprosy.

The above cases seem to be a prelude to the case of "Leucoderma" which I am about to relate. One of the five cases of "Pityriasis" which I have described, and which I have noted did not do well, was also the subject of "Leucoderma." The two diseases were both existent at the same time, and were, I consider, quite independent of one another. On admission to the sick report for "Pityriasis," the mare showed all the symptoms described above, but perhaps in a milder form. There were noticed, however, some whitish spots about the muzzle, but after the subsidence of the Pityriasis, what had at first been but spots where there was a loss of pigment, now rapidly extended to the whole of the face, around the eyes, and both the upper and lower lips. Subsequently the whole surface of the skin became affected, and the loss of pigment could be seen on the hairless parts about the inside of the thighs, perinæum, etc., and also in the hollow of the heels ; and any parts devoid of hair from injury, such as the marks of the branding iron, became white. White hairs appeared over the surface of the body, and the hair on the face, around the eyes, and on the ears also, became white ; the eyelashes were affected, but the long hairs about the muzzle retained their natural colour.

Remarks.—This case, I think, from its exceptional character, is worthy of record. I have frequently met with instances in which there has been a loss of pigment about the lips and other hairless parts, but I have never seen a case similar to the one now recorded, in which the whole surface of the skin was, and is, affected. The mare was a bay with a dark muzzle ; she has now become almost a roan, with a white muzzle and white hair on the face, around the eyes and on the ears. That it is the special disease of the skin

described as affecting the human subject, termed "Leucoderma," I have no doubt. As to the cause, I consider there was a disposition to the disease before the attack of "Pityriasis," as spots were noticed on admission of the mare to the sick lines, and I believe that this attack, creating an altered and unhealthy action of the skin, was the cause of the general and rapid loss of pigment.

With regard to treatment, I seem to be helpless. At first I gave the usual alteratives and tonics, arsenic and preparations of iron, and used various applications, when the disease appeared to be confined to the muzzle; but when I found that the whole surface was affected I ceased local applications, but kept the mare in exercise, and promoted the healthy action of the skin. The mare is in good health and condition, but has a comical appearance, similar to the parti-coloured face of a Christy minstrel.

CEREBRAL TUMOURS.

BY W. CAUDWELL, F.R.C.V.S., WORKSOP, NOTTS.

Case 1. On March 18th, 1885, at 4 a.m., I was called to attend an aged agricultural mare, the property of Mr. William Nicholson, which had aroused the people at the farm by breaking loose in the stable and bursting the door open. I found her attempting to rear and get her fore feet into the manger, and she was sweating profusely. I abstracted blood and administered a cathartic. March 19th. I found her with her head pressed against the wall, her tongue was protruded and bitten, mastication was imperfectly performed, and she moved with a staggering gait. The symptoms of brain pressure subsided somewhat, but again returned with increased severity, and the animal died on the 24th of March.

A *post-mortem* examination revealed the presence of a tumour about the size of a pullet's egg, in the plexus choroides of each of the lateral ventricles of the brain.

Case 2. On September 6th, 1886, I was requested to attend a brown mare, twelve years old, the property of a grocer in this town. Symptoms: During the few previous weeks the animal had appeared lethargic and had not fed so well as usual. She ate a little food and then apparently fell asleep, and held her head persistently to the right side and in a depressed position. She did not lie down to rest at nights as usual, and when at work she was drowsy and constantly bored to the off side. Her pulse, temperature, and respiration were normal. A full purgative dose was administered, and after the bowels had responded freely the animal became a little better and resumed work.

September 17th. She has occasionally broken loose at night, and during the daytime she rests her head in the manger and falls

asleep. When roused she commences to feed, but again quickly relapses into a somnolent condition. She is moved over in the stall and backed with great difficulty.

I informed the owner that there was probably a tumour in the brain, and that treatment would be of no avail.

September 18th. On being let loose in the yard she walked round, turning to the right side, and when made to walk in the opposite direction she ran against the wall and other objects, apparently from an inability to control her movements, and not from defective vision, as the pupils dilated and contracted normally.

I abstracted blood and repeated the purgative, and temporary improvement followed.

September 25th. The owner consented to have the animal destroyed. *Post-mortem* examination :—On exposing the brain and dividing the cranial nerves, in attempting to separate the right olfactory lobule, my finger came in contact with a hard tumour, which was very firmly connected to the crista galli process and cribriform plate of the ethmoid bone, a scalpel being required to sever the connection. The right hemisphere, independently of the tumour, appeared larger than the left. The left hemisphere weighed nine ounces one drachm ; the right, to which the tumour was attached, weighed twelve ounces five drachms. The other divisions of the brain together weighed four ounces three and a half drachms.

Case 3. On June 1st, 1888, I was requested to see a draught mare, sixteen years old, belonging to a farmer who bred her. Two days before I was called in he observed her to appear drowsy and indisposed. She staggers in her gait and has a tendency to rush forward. The mucous membrane covering the lips has teeth marks upon it. Pulse, respiration, and temperature normal.

Diagnosis—Cerebral Tumour. June 2nd, 7 p.m. She has become much worse, pulse very frequent and scarcely perceptible ; she has bitten pieces out of the wood-work of the stable and staggers round the box, occasionally falling, and she presses her head against firm objects. I advised the owner to destroy her, but he declined ; however, she died the following morning, about three o'clock.

A *post-mortem* examination revealed the presence of a tumour in the plexus choroides of the left ventricle of the brain. A deposit of a similar character to that of which the tumour was composed existed in the plexus choroides of the fourth ventricle.

The chief interest attaching to this case is its probable hereditary origin ; an own brother to this mare having died about a month before from cerebral tumours, and the dam of these two horses was found dead in the field some years before, but unfortunately the owner did not have her examined to ascertain the cause of death.

ENCYSTED BULLET.

BY T. MARRIOTT, A.V.D., SIALKOTE, INDIA.

TROOP-HORSE H 14, 2nd Dragoon Guards, admitted to hospital 5th April, 1888, suffering from a large purulent abscess, situated between the point of the off shoulder and front of the sternum. A depending orifice was made, and a large quantity of pus escaped, but after evacuation of the pus extensive induration of the surrounding tissues remained for several days.

On 25th April a second abscess formed in the indurated tissue, and was opened. Suspecting the presence of a foreign body, on examination the probe came into contact with a hard substance which, with a little manipulation, was extracted, and to my surprise it was found to be a Snider bullet, slightly corroded at the apex and having a mark on the base, presumably caused by an attempt to extract it with the bullet forceps.

Referring to the Veterinary History Sheet, I found this horse was admitted to hospital at Cabul on 23rd December, 1879, suffering from a gun-shot wound in the neck, and discharged cured 17th January, 1880. On careful examination, I detected a small scar on the off-side of the horse's neck, over the transverse process of the fifth cervical vertebra, ten inches from the point of extraction of the bullet. It must have been a spent ball, as the apex was not altered the least in shape.

I forward this case, as it seems strange that a bullet should remain encysted for over eight years without causing any apparent inconvenience; then, without any exciting cause, should suddenly act as a foreign body, and make its way to the surface.

SHORT NOTES OF A CASE OF FRACTURED HUMERUS OF A HORSE; WITH RECOVERY.

BY J. A. MEREDITH, M.R.C.V.S., A.V.D., MHOW, INDIA.

IN forwarding the following notes for insertion in the VETERINARY JOURNAL, I do so in the hope it may prove of some slight interest to its numerous readers. I consider the case somewhat unique in itself, being a most apparent fracture easily diagnosed, and one that made a speedy recovery, which was greatly aided by the temperament of the patient and the unceasing and *quiet* attention a syce can bestow in cases that require rest and quietude.

Subject.—A black Arab gelding, one of the few remaining in the Battery D 2 R.A., stationed at camp Deesa, aged 11 years, 14 hands 2 inches.

January 30th, 1888. The patient was kicked by another horse

at 7 a.m. during exercising order, owing to the syce who was riding him taking the horse too close to the horse in front. It was reported to me by the sergeant-farrier of the battery after the horse's arrival at the sick horse lines. The accident happened near to the lines, so the horse had been induced to walk quietly into hospital by extending his leg each step as required, because he was quite unable to do so himself. Direct seat of injury: the deltoid tuberosity of the near humerus, with laceration of the outer covering some two inches long. Upon introducing my finger into the wound, I could discern a longitudinal fracture of the humerus, together with some loose fragments, which I removed. The division of bone extended some five inches, and was most apparent during the time the patient was standing upon the limb (which he could do with ease); but when the limb was flexed the fracture could be brought in much closer affinity, owing to the muscles being in a relaxed condition, and the fracture regaining its normal position. I had the patient immediately placed in slings, and antiseptic dressings of Acid carb. 1-30 applied to the wound.

January 31st. Limb slightly swollen, patient easy, eating.

February 1st. Exhibits pain, and is uneasy. Gave Tinct. aconite xv$\mathfrak{m}$.

February 2nd. Patient shows more uneasiness; limb swollen; Gave Pot. nit. in water; eating fairly well. Discharging freely from wound.

February 5th. Somewhat improved, and not exhibiting so much pain.

February 9th. Doing very well; rests well in slings; swelling gravitating; hand-rubbing to the lower part of the limb; eating.

February 14th. Swelling decreasing; general improvement.

February 20th. Improvement; wound healing rapidly; able to slightly extend the fore arm.

March 3rd. Great improvement; swelling subsided, wound healed; able to extend fore arm.

March 16th. Removed out of slings; allowed a loose box.

March 20th. Gentle exercise (walking).

April 5th. Discharged cured.

Editorial.

LARYNGEAL SURGERY.

VETERINARY surgery is not very progressive, in the ordinary acceptation of the term, and in this respect it compares unfavourably with the surgery of mankind. There may be adduced several reasons for this slow progressiveness, and among them perhaps that of utilitarianism may be mentioned as the most potent. Veterinary operations, unless they restore an animal to usefulness, or even sometimes to its pristine condition of health and conformation, are valueless, and the life of the patient itself is generally no longer worth preserving. No better illustration of this disagreeable truth could be given than the cases of fractures of limb-bones of horses, in which, owing to the uncertainty of a cure being followed by freedom from lameness, destruction of the unfortunate animals is in the great majority of instances decreed, so that fracture of a limb-bone in a horse is only too often synonymous with death to it. And so with several diseases of the feet and some other organs. In the human species the aid of surgery would be invoked in such cases, and no matter how great the amount of mutilation or of subsequent disability the curative measures might entail, so long as the life of the patient was preserved, the surgeon would obtain credit and gratitude for his skill and careful treatment. This may be urged as the principal plea for the apparent unobtrusiveness or non-aggressiveness of veterinary surgery, as compared with human surgery, which is markedly progressive, and leaves no organ or tissue of the body exempt from attack when occasion demands its intervention.

But the thought often arises, in considering the limits and aims of veterinary surgery, whether veterinary surgeons are not sometimes, or even too often, averse or afraid to employ all the resources of their art, under the apprehension that they might fail to accomplish everything that is required or expected of them, when called in to say whether any, and what surgical treatment may be adopted in certain cases of disease or accident. It is generally taken for granted in only too many instances, that treatment is useless, and that the disease or injury being incurable—at least, so far as after-usefulness is concerned—the case may be left to run its course, or the animal be consigned to the knacker.

Surgery is nothing if it is not courageous, as well as skilful and discreet. Operations are now commonly and successfully performed upon the human body, which in the last century were undreamt of, and fifty years ago would have been pronounced impossible, or certainly fatal in their results. It may therefore be that veterinary surgery has been lacking somewhat in courage, and its practitioners, taking the *ipse dixit* of their predecessors as gospel, have not ventured out of the beaten track of unquestioning and undeviating routine.

The very limited number of operations included in veterinary surgery might be advantageously increased, we think, if our colleagues, availing themselves of the aid of modern anatomy, physiology, and pathology, as well as the assistance other branches of science can afford—not omitting mechanical science, were to acquire some of the courage which distinguishes human surgeons, and increase the usefulness of their profession by adding to the list of useful operations. There are many organs which can now be safely rendered accessible to the hand and instruments of the veterinary surgeon, and when they are diseased or injured, his interference may restore the suffering creature to a serviceable condition, while relieving it from distress and pain.

Among the organs which have hitherto been considered beyond the scope of veterinary surgery—at least in this country—is the larynx of the horse, an organ which, owing to the great length and powerfulness of that animal's jaws, and the dimensions of its soft palate, cannot be examined or manipulated *per oram*. And among the morbid conditions of that organ which have been looked upon as incurable, is that which causes the grave respiratory defect known as "roaring." This defect, owing to its serious influence on the utility, and consequent value of horses, as well as the obscurity surrounding the pathological conditions which give rise to it, has rendered it a subject of more than ordinary interest and investigation to ourselves, for many years, as will be seen on reference to the VETERINARY JOURNAL for January and February, 1882, and April, 1887.

"Roaring" is generally considered incurable, and no doubt in the great majority of cases it is, when it has become chronic; so that, as a rule, attempts at cure are seldom if ever made. Tracheotomy, and wearing a tube in the trachea afterwards, first introduced by Günther, of the Hanover Veterinary School, half a century ago, has been sometimes resorted to, but while it affords a certain amount of relief, it has grave disadvantages and cannot be considered as more than a palliative. The removal of the obstacle to respiration, so as to render the horse permanently serviceable, has been attempted at different times on the Continent, though we believe with varying success, and the method of operation appears to have been in many respects not commendable. For a considerable period, we have endeavoured to devise a plan of operation which, while much simpler, easier, and more likely to be effectual than any yet attempted, would be attended with less mutilation and subsequent danger. This method is described by Mr. Smith in the present number of the Journal, though the description is not quite exact, as the manual details, and indeed the entire operation, have been considerably modified. There is every reason to hope, judging from the experience already gained, that the cause of roaring may be removed by this operation, and also that endo-laryngeal surgery, in veterinary practice, will be placed on a sound and safe basis; for it has been demonstrated that any part of the interior of the horse's larynx is now, perhaps, more accessible to the surgeon than is that of man, and that it is somewhat tolerant of surgical manipulation.

There is also a prospect of successfully employing the electric light to illuminate the interior of the organ, and thus to demonstrate its condition to the vision.

We hope soon to be in a position to make some important announcements with regard to this subject, which is receiving all the care and attention it so much merits; in the meantime, it is established that the interior of the living horse's larynx need no longer be regarded as a *terra incognita* to the veterinary surgeon, nor remain exempt from operative treatment.

INTRAVENOUS PROTECTION AGAINST RABIES.

A VERY interesting and important discovery has been made by Professor Galtier, of the Lyons Veterinary School, with regard to Rabies. He has found in inoculating, subcutaneously, sheep and goats with rabific virus, that the disease was almost invariably produced; but when, on the contrary, the same virus was introduced into a vein, the inoculated animals not only did not become rabid, but were protected against the malady. Immunity was even conferred when the intravenous injection was made twenty-four hours after subcutaneous inoculation.

Such results are important from more than one point of view, but their most practical application is obvious. Flocks and herds which have been bitten by a rabid dog may, if the latter is killed, be preserved from ill effects by taking its medulla oblongata, making an emulsion of it, and injecting this into the jugular vein of the endangered creatures.

CASTRATION OF THE MALE AND FEMALE DOMESTICATED ANIMALS.*

BY H. A. PAGET, LOUGHBOROUGH, ENGLAND.

IN discussing the necessity for, and methods and effects of, castration of the various species of domesticated animals, it will be unnecessary for me to enter into detail with regard to the common processes so well known to all; neither will time permit me to do more than just mention the abnormal results which have for their exciting causes some special mode or modes of procedure.

Attempting, therefore, only to describe the *modus operandi* of such methods as are uncommon, or have for some real or imagined virtue commended themselves to my special notice, I shall leave the history of the operation with the remark that it was performed upon males as early as seven centuries preceding the Christian Era, and upon females as far back as the sixteenth century, and plunging at once into my subject, take for consideration first the males, beginning with the horse.

Castration has been performed on the horse in thirteen different ways, some surgical, humane, and successful, others unsurgical, unsuccessful, and brutal in their cruelty.

Bearing in mind that it is the desire of the operator to inflict as little pain at the time, and as little inconvenience afterwards as he can, upon the poor animal who is forced to undergo the operation, the more perfectly to fit him

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*Read before the Veterinary Medical Society of the Ontario Veterinary College on February 28th, 1888.

for man's exorbitant demands, and also that it should be performed in the most surgical, practical, and economical way possible, we shall be in a position to give our unprejudiced consideration to the most common modes now in vogue.

The age at which the colt should be emasculated is a much-disputed point, varying from ten days to two years, the average being one year, and I think quite late enough, unless from lack of development it is thought desirable to leave him entire longer. The only preparation necessary is a moderated supply of bulky food for a couple of days previous to the operation; stimulating food in not however to be withheld.

There are two positions, the standing and the recumbent; the latter is the oldest, and the animal being thoroughly secured it is impossible for him to disconcert the operator by his movements; his (the operator's) person is in greater safety, and he can select any of the methods from the many at his command. The standing operation is, however, coming into favour fast on this continent, and for it it is urged that time is saved, that no risk is run of injuring the animal whilst being thrown, and that the operater is in many ways saved much trouble. The colt is, however, unsecured save by a twitch, and should he struggle will oblige the operator to let go his hold or pull unduly on the cord; it also confines him to the use of one or two methods.

The operations of simple excision, scraping, tearing, free torsion, ligature of the cord and envelopes or cord alone, ligation of the defferent canal, bruising and crushing of the cord, and double subcutaneous torsion, with their variations and combinations, have for several reasons been discontinued in the horse.

First, then, comes the clamps, the oldest of all methods, and one extensively practised by itinerant practitioners and men who aspire only to the title of "castrator," because it is easy to learn and very successful. On account of the lengthened tension to which it subjects the cord, the excruciating pain to which it must for a time subject the animal, and the fact that its most ardent admirer could never call it surgical, professional men are gradually discarding it. Paralysing, as it must partially if not entirely, the cremaster muscle, and thus rendering it impotent when the clamp is removed, it will be seen that the end of the cord will hang round the lips of the wound and the walls of the scrotum, instead of retracting into the inguinal canal, furnishing *the* exciting cause, par excellence, of Schirrous Cord.

Then comes limited torsion, Professor Williams' favourite method, for which he claims virtues from a humanitarian standpoint; these I must admit I fail to see, and though perhaps hardly as cruel as that by the clamps, it follows close in its wake in this respect—it is successful, though tedious and unsurgical.

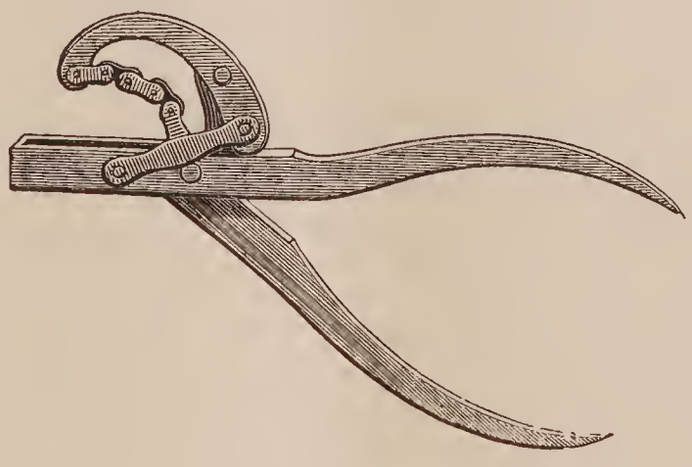
The operation by actual cautery with its variations is still used largely, and if the incision is made with the knife, and the end of the cord only seared, is, I think, not so barbarous as it might at first sight appear. It is eminently successful, which I think is due to the antiseptic power of the hot iron. More swelling follows this than any other operation, and it cannot claim surgical pretensions.

The ecraseur is just now the pet method of the veterinary profession on this continent, and also in some parts of Europe, where it has rapidly come into favour lately. And slowly but surely, my conservative countrymen (Englishmen) are, one by one, taking up this mode of operating. It is chiefly to be commended for the expedition and ease with which it can be performed, both in the erect and recumbent positions; it reduces hæmorrhage to a minimum, and though undoubtedly causing great pain, more nearly approaches surgery than any of the aforementioned methods, and it is equally successful. It is a much-disputed point, as to whether the ecraseur should

be applied over the whole cord, or only the vascular portion of it. The advocates of the former mode claim that the instrument is intended to divide the artery by bruising it, which it does more effectually when the whole cord is enclosed, whilst those advising that the ecraseur should be applied over the vascular part only, state that when the whole is enclosed only one side of the vessel comes in actual contact with the ecraseur, the other being crushed through the medium of the posterior septum, and thus hæmorrhage is more likely to result. With a properly made ecraseur there is no danger of hæmorrhage either way. Less pain is, I think, caused by the latter method, and for the standing operation it is of advantage, as will be explained hereafter.

If the discovery made by Mr. Wende, veterinary surgeon, Buffalo, N.Y., for which the United States Association awarded him a premium, is correct—viz., that the most fruitful cause of Schirrous Cord is non-division of the serous fold of the posterior septum, and the consequent retention of pus therein—it is obviously better to divide the posterior septum with the knife, as there will then be less danger of pus being retained than if the ecraseur be applied over the whole cord.

There are several kinds of castrating ecraseurs. I think for the recumbent position the ordinary Farmer Miles' pattern is as good as any. For the standing position, however, the ecraseur made in the form of a pair of spring



pincers is superior to any I have yet seen. In this position the posterior septum should be divided with the knife, as expedition is everything with a restive animal, and the pincer ecraseur is only able to take in the vascular part of a large cord.

The animal may be only secured by a twitch, or the off hind leg may be drawn forward by means of a side line, the operator standing on the near side. If when the ecraseur is applied the animal should struggle or possibly go down, the operator must not pull on the cord, nor let go his hold of the ecraseur, but relax his grip on the instrument which by virtue of its spring will open and allow the cord to escape until it can again be applied. The incision is made thus. The testicles are grasped with the left hand, and both incisions quickly made from before backwards, going well into the glands; the operator then lets go with his left hand, the animal being unable to retract the testicles, the sudden shock having apparently paralysed the muscles of the parts.

Last and not least, I shall describe the operation of ligation of the spermatic artery alone. It should be performed as follows. A flat clamp, like that used for actual cautery is placed upon the cord, just tight enough to prevent it from retracting; the cord is then cut off with a sharp knife about half an inch from the

clamp. The vessel will now be seen standing out prominently from the rest of the tissues, and with or without the aid of the forceps, can easily be ligated alone. The best ligature will, of course, be carbolised cat-gut, the ends being cut off close to the knot. If silk be used, a long end must not be left to pull it away with, which is unnecessary, and acts as an irritant and a nucleus for the collection of pus.

This mode is the only one which can truly claim to be surgical, and which gives as little pain as possible. Though not extensively practised in this country, it is used by a few men of my acquaintance. Mr. William Cowan, veterinary surgeon, Galt, one of the oldest graduates of this college, tells me that it his favourite method of operating.

The ox is castrated in all the above ways, and also by ligature of the whole cord and double subcutaneous torsion; either of these methods, or that by the ecraseur, are the most applicable, as they are performed in the standing position, which, owing to the pendulous character of the testicles of this animal, is particularly useful. The operation of double subcutaneous torsion, practised much in the South of France, and highly spoken of by Professor Liautard, who ventures the assertion that it will probably become universal in both ruminants and solipeds, consists of changing the position of the testicle, so that the lower extremity takes the place of the upper; the cord is then subjected to a certain degree of torsion, and the testicle by another half-turn restored to its natural position, there to undergo a process of atrophy, which destroys its power of secretion. When the ecraseur is used on cattle it is always applied over the whole cord, there being so much less tissue composing it than in the horse.

In the sheep special care must be taken not to allow an accumulation of blood in the scrotum, as it seems particularly liable to cause troublesome complications in this animal. The above operations are all admissible, but lambs are generally emasculated by pulling out or scraping the cord. There is also in parts of this country a system of dividing the cord and envelopes by means of a cord passed twice round the scrotum above the testicles, and tied in a peculiar way, more easily done than described: the ends of the cord are then tightened until the tissues give way and the testicles come off. This simple and successful method being almost absolutely bloodless, is in some respects preferable to the others.

In the pig the operation is usually performed by simple excision, care being taken in warm weather that maggots do not get into the scrotum. In large animals the operation by scraping or that by the ecraseur will prove useful.

In the dog the operation is not justifiable, leading to no benefit, but being inducive of laziness and plethora.

In the cat it may be performed with advantage by simple excision.

The rabbit, when he is bred for food, is now also castrated to improve the quality of his flesh and increase his weight. As in most other small animals, simple excision is all that is necessary.

Last of the males comes the rooster, condemned by the epicure to undergo the operation, on account of the value which that individual places upon the flesh of the capon, and the weight which the altered bird can be raised to Lately the quotations for capons in the New York market have been upwards of fifteen cents per pound; they can be raised to over twenty pounds weight.

The testicles in the fowl are situated in the abdominal cavity, below the last three ribs, behind the lungs, anterior to, and below the kidneys. There are two ways of operating; one is to cut in between the last and last but one ribs, and by means of a specially-made pair of forceps extract or break down the testicle, which can be seen from this point when the incision is well spread. The other—the one I prefer—is to cut in behind the last inferior rib,

in the angle that it makes with the internal lateral process of the sternum, the direction being such that the incision will bisect the angle. The attachments of the testicle are then broken down by the index finger, and the organ brought outside. If, however, it should slip from the bend of the finger it matters not, as it will be removed by resolution, and the result remain the same.

Now comes the castration of females—a much more interesting list of operations, both as regards their effects, and the surgical skill required to perform some of them with success. Ovariotomy is performed upon the mare and cow by the same operations; viz., by the flank and the vagina.

In the mare the operation is only justifiable when she is continually coming in season, or, when the period of œstrum coming at natural intervals, she is from her nervous and irritable disposition at such times unable to be used.

With the cow, however, this is very different, and there are many reasons which warrant its performance.

The influence which spaying in cattle has upon the quality and quantity of both milk and flesh, and the ease with which they are produced and kept equable, have led to the constant custom in the Island of Jamaica of spaying these animals from their sixth to their eighth year, that is, after they have had their third or fourth calf. By this arrangement the increase of stock is regulated, the supply of milk rendered equable, and of a higher nutritive value, and the average quality of butchers' meat raised.

In the Western States of America it is performed to a large extent for beefing purposes.

It has been performed in this country by Mr. F. C. Grenside, V.S., of the Experimental Farm, Guelph, on both cows and heifers. Various experiments have been tried there with regard to the effects of different kinds and quantities of food upon these as compared with other animals, an account of their production of milk, its analyses, and their increase in weight kept. With these statistics, however, I will not bother you.

The vaginal operation, by all means the most preferable where it can be performed, was first described by Charlier, and is performed by Mr. Grenside, from whom I may say I learned it, with but slight variations from his method. The operator, having secured the animal in a narrow stall or against the side of a broad one, introduces a smooth stick with a bulb or shoulder about two inches from the point, the whole being about three feet long, into the vagina, and places the point in the os uteri. (Charlier uses a vaginal speculum of complicated structure, which I think is unnecessary.) He now takes a sheathed embryotomy knife in his right hand, both hand and arm being smeared with carbolized oil, and sliding it along the stick until he comes to the os uteri, unsheathes the knife; the left hand now pushes gently but firmly upon the stick, thus pressing the os uteri forward; the right wrist presses downwards; the effect of the combined pressure being to render tense the walls of the vagina. The right hand is now turned upwards, and an incision made directly above the os uteri large enough to admit two fingers, which are generally able to reach the ovaries; should they fail, the incision is to be enlarged and the hand passed in. No difficulty is now experienced in finding the ovary, which is drawn through the incision, and either taken off with Charlier's torsion forceps and nippers, a pair of curved shears, a long ecraseur, or a pair of ecraseur shears, constructed in a similar way to the pincer ecraseur, with long handles.

I prefer shears or ecraseur as being less tedious than the torsion method. Care must be taken not to cut the rectum, which can easily be avoided if the vagina be well tensed while the incision is being made. A laxative diet is advisable for a few days, as the wound in the vagina causes the animal to try

to avoid defæcation. I might here state that the period of lactation is from eighteen months to three years, rare cases having been known where cows have given an undiminished supply of milk for four years, and equally rare ones where they have dried up in six months.

The operation by the flank, resorted to for heifers where there is no room for the vaginal operation, is performed thus. The animal being secured, an incision is made in the superior portion of the left flank, a hand's-breadth from the external angle of the ileum, care being taken not to cut the circumflex-ilii artery by continuing it too low down. The surgeon now inserts his hand into the abdomen, and, turning it towards the pelvis, feels for the horns of the uterus; following these he easily finds the ovaries, which are removed in the same ways as in the vaginal operation. In closing the wound an interrupted or continued suture may be applied, or for preference a crucial one, and in either case the lips of the wound must not be drawn tightly together, but a small space be left between them about a quarter of an inch wide. This is found to be preferable to pulling it up tight, owing to the swelling which invariably takes place, due to the irritation caused by the manipulation, etc.

The preparations required for these operations are laxative food for a couple of days or no food for thirty-six hours previously, and for the vaginal operation a rectal injection before commencing.

The sow is spayed in England to a large extent, but in this country she is seldom subjected to the operation. It is usually performed by the flank; the *modus operandi* is as follows:—The sow is secured upon the right side, and the left flank tensed by drawing back the left hind leg. A horizontal, oblique, or, for choice, a vertical incision is made immediately below the lumbar vertebræ and behind the last rib; it should be two or three inches in length, and without dividing the peritoneum, which is afterwards torn with the fingers. The index finger is now inserted between the vertebral column and the intestines; on finding the ovary it is passed towards the opening, through which it is expelled and held until the other is brought out in like manner; they are then torn or scraped off, and the horns returned to the abdomen. The opening is now closed with the interrupted or uninterrupted suture.

It must be borne in mind that cut-gut cannot be used in swine with advantage, as it absorbs too quickly.

The mode by the linea-alba, as performed in the bitch, is also practised on the sow, and is, I think, an improvement on the old method, as it leaves no mark in the flitch of bacon, and is possibly more quickly and easily performed.

The bitch is operated upon occasionally, the effects being to render house pets unable to annoy their owners by their demonstrations; it also enables hounds to go through a long day's hunting with untiring pertinacity. Unlike others, this species when spayed has not the uncontrollable propensity to become fat.

When a beginner I used to administer an anæsthetic, as I thought it was too cruel to perform it without. I have, however, in several instances carefully compared the results of both ways, and am satisfied that no benefit is derived from it. If, however, others who are as incredulous as I was on this point should wish to use an anæsthetic, chloric æther is better than chloroform, being less depressing. I secure the bitch by tying the hind legs together with a soft cord; I then lay her upon the operating-table on her back and tie her four quarters to the table, then elevate her hind quarters by means of a rope from the ceiling, until her body makes with the table an angle of about forty-five degrees. This position allows the intestines to recede upon the diaphragm and spinal column. I then insert a probe of such

a size that it will not go into the horns of the uterus, but only as far as the body; then cutting in in the linea-alba, so as to make the posterior part of the incision come opposite the end of the probe, I feel for the horns of the uterus, and thus getting the ovary, cut it off with a blunt pair of scissors. Both glands being extracted, the incision is closed with interrupted suture of cat-gut or silk, and almost invariably heals by the first intention.

Castration of the pullet is performed for the same reasons as it is in the male bird, and by the same process, the testicle and ovary being similarly situated. It is necessary only to extract the best-developed gland, which will generally be the left, the other being often entirely absent.

This, then, ends this series of operations, some of which it will be our province constantly to perform, and others, though comparatively seldom called upon to effect, the veterinary surgeon should at least be able to accomplish with success.

NOTES ON THE VETERINARY DEPARTMENT OF THE GERMAN ARMY.

BY A. J. HASLAM, M.R.C.V.S., ARMY VETERINARY DEPARTMENT.

EVERY male person, physically able, must, in Germany, receive training as a soldier, so that his services may be of use in case of war.

The period of service in the "Regulars" is *three* years, but all men who pass examination, reaching a certain standard of education, can get off with only *one* year's service as soldier. The entrance examination for a student of veterinary science reaches the above-referred to standard, and hence he gets off with *only one* year's service as a regular soldier. This year's service of the intending *civilian* veterinary surgeon is served in two parts:—

1st. Six months as a common soldier in a cavalry regiment during his college career, and

2nd. Another six months as "Unter Rossarzt" (in order that they may have an idea of military veterinary surgery), this second part being done after qualifying as a veterinary surgeon.

Very few persons wish to enter the army as veterinary surgeon, as a permanency, because the status and pay of the veterinary surgeon in the German Army is very poor indeed, *and far behind the times.*

However, the intending *military* veterinary surgeon must undergo the following training:—

1st. He must decide, when about seventeen or eighteen years of age, and signify his intention to the proper authority. He must then (before entering a veterinary school) serve *one year* as ordinary private in a cavalry regiment. This is to give him practical knowledge of horses, as seen in cavalry.

2nd. He goes to the Berlin Army School of Farriery for *about nine months.* He daily receives lectures on elementary anatomy, and especially that of the foot, and the rest of the day is spent in practical horse-shoeing, nursing, dispensing, and general management of the sick at the hospital attached. As October approaches, he undergoes an examination in practical farriery and shoeing; when, if successful,

3rd. He goes to a veterinary school on the 1st October, where he receives *books, instruments, uniform, and education* FREE for three and a half years, from the State. (Three and a half years is the minimum period in which a student can get his diploma to practise the veterinary art.)

4th. He then passes his final examination, which is conducted by the Government, obtaining his diploma as veterinary surgeon.

5th. He is then appointed "Unter Rossarzt," with relative rank of

"Wachtmeister" (which corresponds to our troop sergeant)—there is a "Wachtmeister" to each "esquadron" of a cavalry regiment, and there are five "esquadrons" to form a regiment of cavalry. There are *one or two* "*Unter Rossarzts*" to a cavalry regiment.

The Unter Rossarzt is a soldier in every sense, wearing the departmental uniform, with the badges of rank of "Wachtmeister." Yet the Unter Rossarzts do not mess with the non-commissioned or commissioned officers, but form their own mess (with the veterinary surgeons of higher rank). The Unter Rossarzt wears one horseshoe on his shoulder.

The Unter Rossarzt remains such for one, two, or three years, according to the manner he passed his final examination (on obtaining his diploma). If he obtained "*Very Good*," he serves *one* year as "Unter Rossarzt"; if "*Good*," for two years; if "*Sufficient*," for three years.

He next becomes a "*Rossarzt*," with *still the relative rank of Wachtmeister.* There are one or two to a regiment of cavalry.

If there are two "Unter Rossarzts," there is one "Rossarzt"; if there is one "Unter Rossarzt," there are two "Rossarzts"; and hence there are three executive veterinary surgeons to a regiment.

The "Rossarzt" is a soldier still, but, of course, can only command at hospital and forge. He may remain "Rossarzt" from three to ten years, but is generally promoted after five or six years as such.

In *order to be promoted, he must pass an examination* in *professional* and *military duties.* If successful, he becomes an "Ober Rossarzt," and *loses now all military rank.* He is now one of the "Militar Beamte" (military officials). He *wears no badge* of *military rank whatever.* He is a *civilian* in uniform. There is one "Ober Rossarzt" to each regiment of cavalry; he has entire veterinary control over his regiment, and command of the junior veterinary surgeons and veterinary establishments of that regiment. *He is entirely administrative*, and not executive (thus there are to each cavalry regiment one administrative and three executive veterinary surgeons). He is not a member of the officers' mess, but goes *very rarely* on especial invitation.

Some "Ober Rossarzts" are employed in superintending the studies of the pupils and farriers undergoing the preliminary nine months' training at the Berlin Military School of Farriery (already referred to), and also other army farriery schools. The *Ober Rossarzt is then a civilian in uniform.* He is promoted by selection to the next step—*Corps Rossarzt.*

The "Corps Rossarzt" is still one of the "Militar Beamte," or military officials; he wears a crown on his shoulder, which is to show his departmental rank. He is a civilian in uniform. There is one Corps Rossarzt to each army corps (each army corps consisting of three to six cavalry regiments, fourteen to twenty batteries of artillery, one "military train," and five or six regiments of infantry). He is entirely administrative, of course.

The class known as "Militar Beamte," or military officials of the German Army, consists of veterinary surgeons (of rank Ober Rossarzt inclusive), paymasters, and commissariat officers. All of these are really civilians, with distinctive departmental uniforms. They wear no badge of relative rank, and are not commissioned officers. They never go to mess except on express invitation, such as a national fete day.

The department is under the directorship of a *major* (cavalry); although he is not a professional man, yet he is the head of the department. The senior veterinary surgeon of the department is employed at the head of the Berlin Military School of Farriery, and as adviser to the director of the department. (The professional advisers of the director are three—a professor of the Berlin Veterinary School, and the two senior veterinary surgeons of the army.)

The Army Veterinary Department of the Prussian Army (all Germany, except Bavaria, Saxony, and Wurtemburg) consists of:—

15 "Corps Rossarzte"	}	339 total.
102 "Ober Rossarzte"		
134 "Rossarzte"		
88 "Unter Rossarzte"		

This "Prussian" Army is formed of 73 cavalry regiments, 29 "field artillery regiments," and 16 "train battalions."

The Veterinary Department of the Army of Bavaria consists of (*i.e.*, those on active list)—

Corps-Stabs-Veterinäre (Corps Rossarzt)	2	46 total.
Stabs-Veterinäre (Ober Rossarzt)	14	
Veterinäre, 1st Classe (Rossarzt)	20	
Veterinäre, 2nd Classe (Unter Rossarzt)	10	

This Bavarian Army consists of 10 cavalry regiments, 4 field artillery regiments, 2 train battalions, and several remount and equitation depots.

The Veterinary Department of the Saxon Army consists of—

Corps Rossarzt ..	1	40
Ober Rossarzt....	8	
Rossarzt	18	
Unter Rossarzt ..	13	

This Army of Saxony ("XII. Armee-Corps") consists of 6 cavalry regiments, 2 field artillery regiments, 1 train battalion.

The Army Veterinary Department of the Army of Würtemburg consists of—

Corps Rossarzt ..	1	17
Ober Rossarzt....	6	
Rossarzt	10	

This Würtemberg Army (XIII. Armee-Corps) consists of 4 cavalry regiments, 2 field artillery regiments, and 1 train battalion.

Thus the total strength of the German Army Veterinary Department is, $339 + 46 + 40 + 17 = 442$, to a total of 93 cavalry regiments, 37 artillery regiments, and 20 train battalions.

The Army Veterinary Surgeon is allowed to do as much civil practice as he likes, so long as it does not interfere with his military duties.

It will be seen that there are four veterinary surgeons to each cavalry regiment, and that the total strength of qualified professional veterinary surgeons is 442.

The veterinary surgeons are *not* associated with the officers of a regiment; they form their own mess, or generally live in the town with their families. (The conditions of the German Army and our own are so different, the total army being in Europe.) Now that two of the veterinary schools are made "Hochschulen" (equal to university), it is very probable that the whole status of the Army Veterinary Surgeon will be altered for the better.

Pay of the Army Veterinary Department.

Unter Rossarzt.—Pay with allowances, 75 marks per mensem (£3 15s.).

Rossarzt.—Pay with allowances, 100 marks per mensem (£5).

Ober Rossarzt.—Pay with allowances, 150 to 175 marks per mensem (£7 10s. to £8 15s.).

Corps Rossarzt.—Pay with allowances, 200 to 225 marks per mensem (£10 to £11 5s.).

Farriers of the German Army.

Farriers, or "Fahnenschneiden," are usually men who have worked in a forge before they attained the age of conscription. All of them are trained at one of the five military farriery schools of Germany. They are taught elementary anatomy, especially of the foot, bandaging, dressing of wounds, and general nursing, as well as practical military horse-shoeing. This course of training lasts six months. The best of these Fahnenschneiden who have received this six months' course are selected and sent to the Berlin Army School of Farriery for *another six months*, to be further trained under the eye of the Senior Veterinary Surgeon directing the establishment. Each of these then becomes an "Ober-Fahnenschneide," and one is sent to each troop (or esquadron) of a cavalry regiment throughout the army. Thus we see that every shoeing-smith receives a course of lectures and training, and every farrier receives a further technical training.

DISEASES AMONG ANIMALS IN THE UNITED STATES OF AMERICA.

THE wonderful progress made by the United States of America is to some extent exemplified by the large volume in which is embodied the report of the Commissioner of Agriculture for 1886. In it we have notices of everything relating to the agriculture of that great country, and much, of course, that is interesting to nations outside it. The portion which will have most interest for the veterinary profession, however, is that in which we find the work of the Bureau of Animal Industry described. The importance of that work may be inferred from the notice given of it by the Commissioner in his general remarks on the whole operations of the Department over which he presides. He says: "The most important work of this bureau has been the investigation and control of the contagious diseases of animals. Our vast areas of productive pasture lands, our enormous crops of grain, and our salubrious climate, have led to a most remarkable development of the flocks and herds of the country. With this increase in the number of animals, their constant importation, and free movement between all parts of the country, contagious diseases have been introduced and disseminated to an alarming extent.

"Most important at this time is the contagious Pleuro-pneumonia of cattle, which, introduced into our Atlantic seaboard States nearly half a century ago, has until recently been kept away from the great central markets of the country. About three years ago the contagion of this disease was carried to Ohio, from Ohio to Illinois, and from Illinois to Kentucky and Missouri. After a continued application of all the authority granted under the national and state laws, the plague was extirpated from Ohio, Missouri, and Kentucky, and it was thought to be also eradicated from Illinois. Unfortunately it has again found to be in existence in and around Chicago in September last. A thorough investigation has shown that the contagion has been disseminated among the cattle in the distillery stables, and among those running at large on the streets and commons of the city and suburbs. Many animals have been exposed. The exact number is not known, but it is certainly very large, and, what is equally serious, the unfenced lands about the city have been infected. Every effort possible under existing laws has been made to locate the diseased animals, and isolate all that have been exposed. With such a plague as this existing in the greatest live-stock centre of the country, threatening to impair both the quantity and quality of our food supply, and increasing the insecurity of our export trade in live cattle and in cattle products, it would

have been most fortunate if every animal exposed to the disease and liable to contract it could have been summarily slaughtered, and contagion thus eradicated. The experience of all countries has been that the malady may be thoroughly and completely stamped out in this way, and that there is no other means by which the bovine species can be protected from it ravages. This disease is one of the most destructive which affects domesticated animals; it does not run a definite course and disappear, but remains in the same herd year after year, and as it frequently assumes a chronic form, there is more than ordinary temptation to dispose of the milk and flesh of diseased animals for human food.

"With a disease of this character at Chicago, it has been truly said that the cattle industry of this country has reached a crisis. There can be no doubt that it will be soon and widely disseminated, unless prompt and effectual action can be instituted for its speedy suppression. Even now it may have been scattered to some extent in the West, and the investigations of the next year will probably bring other outbreaks to light. The matter is a most important one, overshadowing in urgency all others affecting our agricultural population, and of vital interest also to every consumer of beef, of milk, of butter, of cheese. To prevent the spread of this scourge, which has already greatly affected our foreign and inter-State commerce, additional legislation by Congress is now essential.

"Under the authority conferred by the Acts approved May 29, 1884, and June 30, 1886, the Department has co-operated with such States as accepted its rules and regulations for controlling and extirpating this disease. Much valuable work has already been done in Maryland, and the danger of the dissemination of the contagion from that State has been greatly lessened. No work has been done in the State of New York, because it was evident that the appropriation was not sufficient to secure any favourable results there on account of the extent of the infection. The disease also exists in New Jersey, Pennsylvania, and Virginia, but the State authorities have not yet accepted the rules and regulations of the Department for co-operation.

"I greatly regret the necessity of announcing the existence of this dangerous disease over such a wide area, but the serious results to be apprehended from it make it imperative that the truth should be known, in order that such legislative action may be taken as is indicated by the emergency.

"Of next importance among the contagious diseases of animals is the plague of swine, generally known as Hog-cholera. The losses from this malady are estimated at from ten to thirty millions of dollars annually. The investigations of the past year have thrown much light upon its nature and cause; they will make possible more intelligent measures of prevention, and it is hoped that they will soon lead to discoveries which will enable our farmers to guard with more certainty against it.

"In former years the introduction into the herds of our middle and northern States of the Texas or Splenic Fever of the South has caused the loss of many cattle during the hot and dry weather of summer and fall. The information which this Department has collected and disseminated in regard to the nature of this disease, and the districts from which it might be introduced, has enabled our stock-men to protect themselves so effectually against it that the losses of the current year have been inconsiderable.

"The quarantine on cattle imported from other countries has been maintained by this Department, and during the year no cases of contagious disease have been detected among such animals."

NOTES COMPILED FROM VARIOUS AUTHORS ON SOME OF THE MORE COMMON METHODS OF STAINING MICRO-ORGANISMS.

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THE progress made in bacteriological research within the last few years, is chiefly due to the discoveries made in Germany of the method of staining micro-organisms with aniline dyes, now generally used. And the object of this paper is to give, in as brief and simple a manner possible, an outline of this process, and the general principles on which bacteriological research is conducted.

The possibility of staining micro-organisms, both in fluids and in sections of solid organs, was first demonstrated by Weigert with carmine and hematoxyline, and afterwards by means of aniline dyes, which are the best; and with certain improvements introduced by Koch, Ehrlich, Gram, Cornil, Babes, and others, is what is now generally used.

The manner in which microbes are coloured, whether in fluids or in sections of organs, is based on the fact that certain dyes have an affinity for certain tissues, such as cell nuclei, and an example of this can be given by Weigert's first process. If a section of an organ containing microbes is placed for a certain time in an aqueous solution of an aniline dye—methyle blue, for example—at first the section will not only be deeply dyed, but what is known to bacteriologists, over-coloured. If this section is placed in what is known as a decolouring agent—that is to say, an agent that has an affinity for the dye, such as acidulated water-solution of carbonate of potash, methylated spirit, or absolute alcohol—the section gradually loses its colour in the following order: the intercellular connective tissue, the protoplasm of the cell, the nucleus, and, if continued long enough, the microbe itself, and so, by carefully regulating the process, specimens can be obtained in which the microbe alone, or the microbe and cell nuclei, only remain coloured. This process is much the same as has been used for a long time past by histologists to demonstrate the existence of cell nuclei.

The aniline dyes that are generally used in bacteriological research are methyle violet, gentian violet, methyle blue, fuchsine, vesuvine, rubine, cocconine, safranine, etc., most of which are soluble in water or absolute alcohol.

Pathogenic micro-organisms are found in both the fluids (pus, blood, sputum, etc.) and solid organs of the body, and the first can be coloured at once, without any preliminary preparation, by merely placing a drop of the fluid to be examined on a cover-glass, then placing a second cover-glass sandwich fashion over it, to flatten it out, removing the two glasses, and allowing the film to dry. A small quantity of aniline dye is placed on this film, and in a few minutes the microbes will be found to be stained. Specimens thus obtained are, however, not satisfactory, being confused and blurred, especially when the fluid is rich in albumen, which causes the dye to be precipitated in patches, and obstructs the view. This Koch has overcome by his method of drying the film, or, as he terms it, "Trockenpræparate." The two cover-glasses being separated, the film is exposed to the air, when the rapid drying of the fluid will fix the microbes on to the glass, and in this state they can be kept for months for future examination. If it is desired to at once stain the specimen, the moisture from the dye will be absorbed so rapidly that the same difficulties will be encountered as described in direct staining, and to avoid which it is first of all necessary to coagulate the albumen. This is done by passing the cover-glass with the film upwards, three times slowly through the flame of a spirit lamp or a

Bunsen's burner. And when so dried, the film does not absorb any more water; in fact, it behaves the same as a section, and can be stained in the same manner. This is done by placing a drop of dye on the side of the cover-glass on which the film is, or better still by pouring some of the dye into a watch-glass and floating the cover-glass on it, with the film downwards, for as long a time, "which varies with different micro-organisms," as is necessary. When stained, the film is washed with distilled water from a wash bottle, dried in the air or over a spirit lamp, and mounted in Canada balsam, when it can be kept as a specimen indefinitely. A cover-glass specimen can be made from any portion of soft tissue in which micro-organisms are suspected, as the spleen, exudative matter, etc., by rubbing a small portion of it on to a cover-glass, and then flattening it out into a film in the same way as is done with a drop of fluid. Such preparations are extremely convenient to determine the presence of microbes, without having to take the trouble or time to harden organs and cut sections.

Sections should be cut from organs as fresh as possible, but that have been previously hardened in alcohol or other suitable medium, and it is needless to say they should be as thin as possible. The dye used, length of time the section remains in it, and after-treatment it is subjected to, varies according to the nature of the microbe it is desired to demonstrate, but the following general directions are applicable to most of them. Most microbes, whether pathogenic or not, stain by Weigert's method of dyeing with an aqueous solution of the aniline dyes, the best being gentian violet, methyle violet, and fuchsine, which all give nearly the same result. They are made from one to two per cent. and quickly decompose, even when a small quantity of thymoil is added; therefore it is necessary that they should be freshly made and filtered before use. A convenient method of making an aqueous solution is to have at hand a concentrated solution of the dye, of which a certain quantity can be added to a certain quantity of distilled water as required. The sections are left in the dye for periods varying from a few seconds to several hours, and are then transferred to absolute alcohol, in which they are left until the tissue is completely decoloured, only the microbes being left visible. This is the most delicate part of the process, and only can be learned by practice, as it is necessary to leave the section in it long enough to remove the dye from the whole of the tissue except the micro-organisms, and yet it must not be left too long or they will be decolourised also. The section is then cleared up by placing it in oil of cloves, cedar, or bergamote, the excess of which is removed by blotting paper, and then mounted in Canada balsam, prepared with benzole, or xylal. If oil of cloves is used care must be taken that the section is not left in it too long, a few seconds being enough, as it has a great affinity for aniline dyes, and if care be not taken it will remove the colour from the organisms as well as the tissue. Methyle blue in an aqueous solution is particularly recommended by Ehrlich, as it differs from other aniline dyes, or it does not over-colour sections, even if they are left in it for a considerable time. Lœffler's method gives even better results than Ehrlich's; the formula is as follows :—

Saturated alcoholic solution of methyle blue	... 30 cc.
Aqueous solution of caustic potash, 1/1,000	...100 cc.

This dye is particularly recommended by Lœffler for staining the organisms of Typhoid, Glanders, Diphtheria, and Recurrent Fever.

There are certain micro-organisms that comport themselves in a characteristic manner with certain reagents, both colouring and decolourising, the best known being the bacillus of Tuberculosis. Koch demonstrated the presence of this bacillus by the following method of staining. The sections or cover-

glass films were placed for from twenty to twenty-four hours in the following dye :—

Concentrated alcoholic solution of methyle blue	1 cc.
Solution of caustic potash, 10 per cent.	2 cc.
Distilled water	200 cc.

The section, which is coloured a deep blue, is washed in distilled water, then placed for fifteen minutes in a concentrated aqueous solution of vesuvine, washed again in distilled water, and examined in the usual way with an Abbe condenser, when the bacillus of Tuberculosis will appear blue and any others, "such as might be expected to be found in expectorated mucus or sputum," as well as the cell nuclei, brown. This is one of the first and best-known instances of a particular bacillus taking a particular stain.

Ehrlich's method, which is very simple and certain, is, with slight modifications and alterations that have been introduced by Koch and Weigert, as follows :—2 cc. of aniline oil are added to 50 of distilled water, mixed together by frequently shaking for several minutes, and then let stand for five more, and filtered through a paper moistened with distilled water, so that any drops of oil not dissolved may be absorbed. To the clear filtrate add 5 cc. of concentrated alcoholic solution of gentian violet or fuchsine, add 5 cc. of absolute alcohol, shake together and filter ; this solution will keep good for eight days. Sections of Tuberculous organs on cover-glass films are placed in this solution for from twelve to twenty hours, or if raised to 40° Cent. (104° F.) from one to two hours. When removed from the dye the preparations are placed in a solution of 3 or 4 to 1 of nitric acid and water, or in a 2 to 3 per cent. solution of hydrochloric acid in absolute alcohol. They are then washed in distilled water, afterwards in absolute alcohol, cleared up in oil of bergamote, and mounted in Canada balsam, when the section will be colourless, only the bacillus retaining the dye.

In Gram's method, the section or cover-glass film, is placed in Ehrlich's solution of gentian violet for from one to two minutes. If sections they must be transferred to the dye from absolute alcohol, not water. When removed from the dye, they are transferred to Lugol's solution, the formula of which is as follows :—

Iodine	2 grams.
Iodide of potassium	2 ,,
Distilled water	200 ,,

Transfer to absolute alcohol, when the section gradually loses all colour, and if necessary change the alcohol after ten or fifteen minutes. Clear up with oil of cloves, cedar, or bergamote, and mount in Canada balsam, when the organisms will appear an intense blue against the colourless tissue. The iodine acts by fixing the colouring matter in the organisms and preventing their decolourisation by prolonged action of alcohol. Another plan is to place the section in alcohol, when removed from the dye, decolourise, and then place in Lugol's solution, but the results are not so satisfactory as if they are at once transferred from one solution to another.

Nearly all pathogenic micro-organisms, the bacillus of Anthrax, Tuberculosis, and Leprosy, the pneumococcus, and organisms of suppuration, Erysipelas, Actinomycosis, etc., stain by this method, only the bacillus of Tuberculosis must be left in the dye for about twenty-four hours. It is as well to remember that with Gram's method the best results are obtained with gentian violet, with other colours—fuchsine, for example—the results are not so satisfactory.

It is often desirable in a preparation to stain the histological elements differently to the microbes, such as the cell nuclei, for example, in order to

more correctly determine the presence of the organism by its contrast in colour. To do this, the section when brought out of the first dye and decolorised, is passed rapidly through a solution of a dye that will give a marked contrast to that which the microbe is coloured with, as, for example, methyle blue or gentian violet in contrast with carmine or rosine.

A good plan with sections stained by Gram's method, is to "commence" by staining the tissue. This is done by first placing the section for several minutes in picro-carminate of ammonia, then washing in distilled water and alcohol in the usual manner, then dyeing by Gram's method; when mounted it will be found that the carmine will colour the cells and tissue red in contrast to which the microbes will be a very dark blue. The bacillus of Tuberculosis can be coloured in the same manner only by substituting Ehrlich's for Gram's method.

Micro-organisms should always be studied with a water, or better still an oil immersion lens, and Abbe's condenser, without a diaphragm, and a plain mirror. By this method of illumination the details of the tissue disappear, but the dyed parts, "viz., the micro-organisms," appear most distinctly. In this paper no theories are given, nor is it attempted to explain the action of dyes or reagents. All that is attempted is to lay before the busy practitioner some of the simpler methods of staining micro-organisms for the purpose of diagnosis. Furthermore, it is merely a compilation from various authors—not original.

THE HIGHLAND AND AGRICULTURAL SOCIETY'S PLEURO-PNEUMONIA INQUIRY.

THE Directors of the Highland and Agricultural Society appointed a Committee last year to conduct an inquiry in regard to Pleuro-pneumonia, which was at that time very widespread in Scotland, and the ravages of which were being severely felt by farmers. The Committee consisted of Mr. Paterson, of Birthwood (convener); the Hon. R. Baillie-Hamilton, Mr. Maxwell, yr. of Munches; Mr. Marr, Cairnbrogie; Mr. Murray, Catler House; Mr. Middleton, Clay of Allan; Mr. Stirling, of Kippendavie; and Dr. Aitken, the Society's chemist. They invited the co-operation of those in Scotland who were likely to be best informed regarding the nature of the disease, or who had had practical experience of it among their herds; and the principals of the three Scottish veterinary colleges, together with other veterinary surgeons, representatives of local authorities, and a number of dairymen and stock owners, were asked to give evidence. The inquiry took place last summer, the following seventeen witnesses being examined:—Mr. Thomas Elliot, of Blackhaugh, Galashiels; Mr. Richard Rutherford, F.R.C.V.S., Edinburgh; Mr. William Cairns, Fountainbridge, Edinburgh; Mr. Robert H. Runciman, 7, Montgomery Street, Edinburgh; Mr. William Cooper, Sunnybank Cottage, London Road, Edinburgh; Mr. James Stenhouse, Jun., Turnhouse, Cramond; Mr. James Biggar, Grange, Dalbeattie; Mr. Patrick Webster, of Westfield, Forfar; Mr. Robert Rutherford, F.R.C.V.S., Edinburgh; Principal Williams, New Veterinary College, Edinburgh; Principal Walley, Dick's Royal Veterinary College, Edinburgh; Principal M'Call, Veterinary College, Glasgow; Mr. Robert Reid, M.R.C.V.S., Inspector under the Cattle Diseases Act, and Superintendent of Slaughter-houses, Leith; Mr. George Philip, M.R.C.V.S., St. Andrews; Mr. R. O. F. Stewart, Montrose; Mr. Andrew Spreull, M.R.C.V.S., Dundee; and Dr. Wohltmann, Halle, Prussia. An epitome of the evidence given before the Committee has been prepared and supplied to the Privy Council, and it will be published in the forthcoming volume of the Transactions. The following is an outline of the views and practical experience of the different witnesses examined:—

Mr. THOMAS ELLIOT, Blackhaugh, Galashiels, said he had had about fifty

years' experience of Pleuro-pneumonia, and it had always been got from Irish cattle, the disease being contracted during transit. He believed it was due very much to the holds of the vessels in which cattle had been conveyed not being properly cleaned. He had seen the disease break out in the cattle six months after they had been brought from Ireland to this country. When he abandoned Irish cattle, the disease disappeared, and his opinion was that, not being indigenous in this country, it could not exist in Scotland if proper steps were taken. He thought the transit of Irish cattle the worst in the world, and he recommended an improvement in that direction.

Mr. RICHARD RUTHERFORD, F.R.C.V.S., Edinburgh, advised, as an effectual method of dealing with an outbreak of Pleuro-pneumonia, the slaughter of all affected and suspected animals, and the immediate inoculation of the remainder. Successful inoculation conferred immunity, and he had never known an animal so inoculated to contract the disease, although it had been subjected to subsequent outbreaks. Pleuro-pneumonia was not discernible in the early stages. He thought an inspector should have absolute power to put down anything he suspected. A cow that had recovered from Pleuro-pneumonia was capable of disseminating the disease for twelve months afterwards. Out of some hundreds of animals lately inoculated he had not lost one. Calves should not be inoculated under three months. His opinion was that the disease could be eradicated by means of inoculation. He had known infection carried to animals in another field two hundred yards distant. Inoculation discovered the disease in fourteen days. Animals incapable of inoculation should be destroyed as suspected. For years Edinburgh was a hotbed of disease, but now it was one of the healthiest parts of the kingdom, and that because the disease had never gone beyond two or three cases. He did not think they had sufficient powers. The system of stamping out by slaughtering, and isolating the remaining animals, would not be as effectual as inoculation, because the animals isolated had been exposed to the disease, and the incubative period might be six months. He did not think it was at all necessary to have compulsory inoculation throughout the whole country. It was more necessary to recognise the fact that inoculation applied to Pleuro-pneumonia reduced it from a disease dangerous and rapidly spreading to a disease easily handled. If inoculation was pursued in Ireland especially, where the disease was constantly in existence, with the same success as it could be done in Scotland, there would be little Pleuro-pneumonia; and when it did exist it could be dealt with by a skilled veterinarian, and it would become a matter of not the slighest consequence whatever. The inspection in Ireland was very bad; it was of a "kid-glove" character. His experience led him to advise the adoption of protective inoculation along with compulsory slaughter.

Mr. WM. CAIRNS, dairyman, Fountainbridge, said that for ten years previous to 1878 he had Pleuro-pneumonia at his place. He had had no outbreak for three years, and this he attributed to inoculation The cows which he had not inoculated died, while those that were inoculated remained healthy. He was satisfied that inoculation was a sure preventative.

Mr. R. H. RUNCIMAN, dairyman, Leith Walk, said he had had three outbreaks during the eight years in which he had been engaged in dairying. He had got the cows inoculated, and there had been no fatal results. In one case, however, an inoculated animal took Pleuro four or five months afterwards.

Mr. WILLIAM COOPER, dairyman, Edinburgh, said he had been engaged in the business since 1859, and he had never had an outbreak since he began to inoculate in 1878. Before that he was scarcely ever free from the disease. His inoculated cows did not infect the fresh stock.

Mr. JAMES STENHOUSE, jun., Turnhouse, said he had a dairy farm, and had

had one outbreak of Pleuro-pneumonia. Seven of the cows were slaughtered, and the remaining seventy were inoculated, and all got better. After a lapse of several days he placed fresh stock among those cows, and none of them took the disease. His opinion was that when inoculation failed as a preventative it was entirely the fault of the operator.

Mr. JAMES BIGGAR, Grange Farm, Dalbeattie, spoke to an outbreak on Chapelton Farm in 1886. The diseased animals were slaughtered, and the remainder that had been in contact with them were inoculated, and did not communicate the disease. Some time afterwards the inoculated animals were mixed with others that had not been inoculated, and all remained healthy.

Mr. PATRICK WEBSTER of Westfield, convener of the Local Authority of the county of Forfar, said he had been brought a good deal in contact with outbreaks of Pleuro-pneumonia, and he thought it desirable that an exhaustive inquiry in regard to it should be made. He also spoke as to the successful results of inoculation. As showing the comparative expense of inoculation and stamping out in Forfarshire, he stated that, when their policy was that of inoculating, the compensation paid for slaughtered cattle amounted to £760 14s. 1d., and £37 9s. for animals killed because of being in contact—together, £798 3s. 1d. When the policy was changed by the Privy Council they had to pay as compensation for diseased cattle slaughtered £519 2s., and for cattle in contact £1,126 7s. 9d., or in all, £1,645 9s. 9d. They had been compelled to slaughter 117 animals that had been in contact, but which, if inoculation had been carried out, might not have taken the disease.

Principal WILLIAMS, New Veterinary College, Edinburgh, gave it as his opinion that Pleuro-pneumonia was incurable, and he would give a diseased animal no treatment except the pole-axe. He believed it possible to carry the infection a distance of 200 to 300 yards, but he did not think it possible for the disease to be transmitted by man to animals. He would not say that inoculation gave immunity to an animal for the remainder of its life, but he would limit the period to two years, or, practically, for the ordinary life of a feeding beast. His opinion was that the best way to treat an outbreak of Pleuro-pneumonia was to slaughter everything that was suspicious, and inoculate all the rest. He would not prescribe inoculation for a healthy herd. He thought all local authorities should be abolished, and that the veterinary inspector should have power to order slaughter without consulting the local authority. He should say that stamping out was the safer way, but it was expensive. With their present knowledge, he would recommend the inoculation system, so as to keep Pleuro-pneumonia under control.

Principal WALLEY, Royal (Dick) Veterinary College, said he had inoculated many animals with both good and bad results, but he thought the bad results might be largely attributed to local causes. The result of his observations generally had been that, if the animals were inoculated immediately the disease broke out, and if the disease was detected at the earliest stage of the outbreak and the animals immediately inoculated, it was very successful in preventing the further spreading of the disease among them. If, on the contary, the disease had been hidden, and the animals exposed for weeks or months to the infection, it was sometimes very unsuccessful. He instanced cases in which cows had become infected although inoculated. A good deal of the disease had been brought to Scotland from Dublin and Cumberland, and there was no doubt that the restrictions there had done good.

Principal M'CALL, Glasgow Veterinary College, said he had had two outbreaks of Pleuro on his farm, and on the first occasion, twenty years ago, he tried isolation, but half his stock died, all having taken the disease in a very bad form. Having described in some detail the treatment for Pleuro-pneumonia, he mentioned an instance in which inoculation had been tried, and where the disease had broken out afresh afterwards. He approved of inocu-

lation, provided it was performed on the animal before it had been exposed to the infection. He did not think an animal slightly diseased would be saved by inoculation, or that the progress of the disease would be stayed. He rather thought that in most cases inoculation would intensify the natural malady. For inoculation to be of use to the country it should be made as compulsory to inoculate calves as it was to vaccinate children. The difficulty that would arise would be as to procuring a sufficient quantity of lymph; but if inquiry was carried out on these lines it would be attended with valuable results. He would recommend the compulsory inoculation of all calves in the country, because he would expect that in a few years the disease would be got rid of. Pleuro-pneumonia, like Small-pox, must run its course. If a few thousands of pounds were set apart for it, a great deal could be made out experimentally which was at present a matter of opinion and dispute. Another thing to see was whether lymph could be cultivated so as to make it a safe operation, if they could have a quantity in a capillary tube. If that could be done, there would be no difficulty in getting rid of the disease by inoculating the calves. If Parliament would vote a sum of money for a series of experiments it would be of great importance.

Mr. ROBERT REID, Inspector under the Cattle Diseases Act, and Superintendent of Slaughter Houses, Leith, said his experience extended back to 1864. During that period, and before inoculation was practised, the mortality from Pleuro-pneumonia was about 14 per cent. Since inoculation had been performed the death-rate of cattle from the disease had only been 2 per cent. He regarded the great improvement that had taken place as being entirely due to inoculation, which he looked upon as a great and sure preventative. He thought that no animal that had been successfully inoculated could ever take Pleuro-pneumonia afterwards. He was of opinion that the inspection of Irish cattle should be inquired into, as the disease was being continually brought over from Ireland.

Mr. R. O. F. STEWART, Montrose, described a case of Pleuro-pneumonia in a healthy-looking cow with encysted lung, and which had communicated the disease to other animals without its being observed for four months.

Mr. ANDREW SPREULL, F.R.C.V.S., Dundee, gave it as his opinion that it was scarcely possible to carry the infection of Pleuro-pneumonia by litter or food. If animals were inoculated before the expiry of the incubative stage there would be no disease. He would not, however, inoculate all young stock, but only when an outbreak occurred. He had found inoculation quite as certain to exterminate the disease as the process of stamping out. Inoculation would cause animals that were not perfectly healthy to show the disease within three weeks. He would inoculate every animal on an infected place, and he believed that there was less danger in selling animals that had been inoculated than in selling out stock that had had the disease amongst them after the statutory period of fifty-six days. He was of opinion that inoculation should be made compulsory. His experience was that those who had not practised inoculation were against it, and those who had practised it were uniformly in its favour. He did not consider the fifty-six days' restriction adequate without inoculation.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

MEETING OF COUNCIL HELD MAY 29TH, 1888.

Sir HENRY SIMPSON, the President, in the Chair.

Present:—Professors J. Wortley Axe, G. T. Brown, C.B., W. Duguid, W. Pritchard; General Sir Frederick Fitzwygram, M.P.; Messrs. J. Roalfe Cox, E. C. Dray, Thomas Greaves, W. Mulvey, A. H. Santy, T. H. Simcocks, James F. Simpson, Peter Taylor, W. Woods, F. W. Wragg, the Secretary, and Mr. C. Thatcher (Solicitor *ex officio*).

The SECRETARY read the notice convening the meeting.

The PRESIDENT said that it was his painful duty to announce the death of Mr. Harpley, whose loss he was sure every member of the Council would deeply deplore. Mr. Harpley had been elected to the Council in 1860, and had continued in office until the day of his death. He was a member of the Board of Examiners, and had accepted the post of President of the College in 1872. He was also one of the Governors of the Royal Veterinary College, and a member of the Veterinary Committee of the Royal Agricultural Society. He (the President) would move "That an address of condolence be forwarded to the late Mr. Harpley's nearest relative, his sister, expressing the Council's regret at her loss, and their high appreciation of his services."

Mr. DRAY seconded the motion, which was agreed to.

The PRESIDENT stated that the Charter required that, within one month from the annual meeting, a Council should be held for the purpose of electing a President, Vice-Presidents, and the Secretary and Registrar, and they were assembled for that purpose. It had been usual to transact that business only, but until they proceeded to elect their Vice-Presidents the Council was complete, and any business could be transacted. He was further advised that a special meeting to elect the Committees was unnecessary, and that, in the event of only one nomination being made for President, a ballot was unnecessary. He had asked Mr. Thatcher to be present in case any members of the Council might wish to ask any questions as to the mode of procedure.

Mr. PETER TAYLOR thought the fact of his not being a member of any Committee ought to have been mentioned in the annual report. As the legal adviser was present he would like to ask whether it was legal for the Council to vote a sum of £25 towards the expenses of inviting distinguished guests to their annual dinner.

The PRESIDENT begged to assure Mr. Taylor that the expense of inviting distinguished guests to the annual dinner would not fall on the College funds.

Mr. THATCHER thought such an expenditure was legal.

Mr. PETER TAYLOR moved, and Mr. DRAY seconded, "That the minutes of the previous meeting be taken as read."

Mr. J. ROALFE COX moved as an amendment, seconded by Professor PRITCHARD, that the minutes be read.

The SECRETARY then read the minutes of the previous meeting.

Mr. J. ROALFE COX objected to the minutes as being incomplete, stating that his own remarks with regard to a certain explanation he had given of a protest had been apparently entirely suppressed.

The PRESIDENT said that at the last meeting a resolution was passed that only an abbreviated report should be made of the proceedings. The report had been sent to him; he had exercised a discriminating hand in its abbreviation, and was quite prepared to take the responsibility. He assured the Council that the minutes that had been read was a fair and accurate representation of what had been said by everybody.

Mr. JAS. F. SIMPSON moved that the minutes of the previous meeting be confirmed.

Mr. PETER TAYLOR seconded the motion, which was agreed to.

Absentees.

The SECRETARY said that he had received letters of apology from the following gentlemen regretting their inability to attend the meeting:—Messrs. Storrar, Walley, Barford, Whittle, Carter, McCall, and Dr. Fleming.

Correspondence.

The SECRETARY read a letter from Mr. Branford.

It was resolved that the letter should lie upon the table.

A letter was read from Mr. A. W. Sisson, and the Secretary was instructed to inform him that the Principal of any veterinary school in the United Kingdom would give him the desired information.

Report of the Registration Committee.

The SECRETARY read the report. He said that cautionary letters would be sent, and a month allowed for a satisfactory reply. If no reply were received within that time further steps would then be taken.

Mr. PETER TAYLOR moved the adoption of the report, with the exception of that part relating to the expulsion of a registered practitioner, which was ordered to stand over, there not being three-fourths of the whole Council present as required by the Veterinary Surgeons Act.

Mr. DRAY seconded the motion, which was agreed to.

Report of the Finance Committee.

The SECRETARY read the report, which, on the motion of Mr. PETER TAYLOR, seconded by Mr. WOODS, was agreed to.

The PRESIDENT called attention to the fact that the outside of the building required to be painted. He suggested that the matter be referred to the House Committee with power to act, the Secretary to obtain an estimate.

Mr. JAMES F. SIMPSON thought that the wisest course to adopt. He hoped that the back entrance of the College would be made use of during the repairs, for the purpose of asserting their right.

The resolution was agreed to.

Motion by Mr. James F. Simpson.

This motion was by consent postponed to the next quarterly meeting of the Council.

Election of President.

Mr. DRAY said he had great pleasure in proposing Professor Pritchard as President of the College for the ensuing year. Professor Pritchard stood so high in the profession that any comment from him would be superfluous. He had been one of the most popular professors of the Royal Veterinary College at Camden Town, and the students vied with each other to pay him the most attention and respect. He (Mr. Dray) might remark *en passant* that when Professor Pritchard sent in his resignation the Governors of that Institution very reluctantly accepted it, and urged him not to resign his post. With all due respect to the Council he considered Professor Pritchard's claim to the Presidentship had been too long neglected; *ergo* let them redeem the past by now unanimously electing him, feeling sure that he would carry out the duties in an efficient manner, and advance the interests of the profession.

The resolution was carried by acclamation.

The Presidential chair was then vacated by Sir Henry Simpson, and was taken by Professor Pritchard.

The PRESIDENT thanked the Council for the honour they had done him in unanimously electing him as their President for the coming year, and he would, he said, to the best of his ability perform the duties which pertained to the office. To be elected President of the College was the highest honour that the profession could confer upon any one of its members; and though the President's chair was not always a bed of roses, it would be his best endeavour to steer the ship clear of the enemies of their Corporate Body. He again thanked the Council for the compliment paid to him, and he trusted when the time came for him to resign his office that there would be no regrets on the part of anyone that he had that day been elected President.

General Sir FREDERICK FITZWYGRAM proposed a vote of thanks to the retiring President, Sir Henry Simpson, for the able and efficient manner in which he had fulfilled the duties of his office. Sir Henry had, he said, carried with him throughout the confidence of the Council, and his year of office had been marked by a great advance in the interests of the profession

Professor BROWN seconded the motion, which was carried unanimously.

Sir HENRY SIMPSON thanked the Council for their kind acknowledgment of his services as President during the past year. A peaceful revolution had, he thought, been accomplished. There had been perfect good feeling with regard to the passing of the new bye-laws, the new rules of examination, and the election of the new Examining Board; and although it could not be expected that all would agree that the changes were right and judicious, the view of the majority had been adopted, and he felt sure that every member of the Council, whether agreeing with the alterations or not, would give loyal support to existing institutions. He should always consider any experience that he might have gained during his year of office at the disposal of the gentleman the Council had just elected should he wish to avail himself of it.

Election of Vice-Presidents.

The following gentlemen retired by rotation from the office of Vice-Presidents:—Messrs. Jas. F. Simpson, Simcocks, Woods, Brown, Santy, and Briggs.

It was stated by Mr. WRAGG that Mr. Santy, having retired from practice, did not desire his name to be put up for re-election.

The following nominations were made:—Mr. Cartledge and Mr. Woods by Mr. James F. Simpson, Mr. Clement Stephenson by Mr. Mulvey, Mr. Briggs by Mr. Wragg, Mr. Simcocks by Mr. Greaves, Mr. Wilson by Professor Brown, Mr. William Hunting by Mr. Mulvey, and Mr. Banham and Mr. Stevens by Mr. J. Roalfe Cox.

The ballot having been taken, the following gentlemen were declared to be elected:—Messrs. Simcocks, Briggs, Cartledge, Woods, Stephenson, and Wilson.

Election of Secretary and Registrar.

Mr. DRAY, said that, owing to his long association with the worthy Secretary, Mr. A. W. Hill, he was perhaps better able than any other member of the Council to speak of his abilities. He possessed qualities and attributes which few gentlemen in his position could boast of; in fact, he possessed in a remarkable degree the *suaviter in modo* with the *fortiter in re.* Mr. Hill's duties had been very much increased during the past year, but he had applied extra ability and assiduity, and had surmounted all the difficulties.

Any further observation from him (Mr. Dray) would be supererogation, and he had great pleasure in proposing the re-election of their worthy Secretary and Registrar.

Mr. WRAGG seconded the motion.

Sir HENRY SIMPSON had great pleasure in endorsing what had fallen from Mr: Dray. There was no question, he said, that the duties of the Secretary of ten years ago and of the Secretary of to-day were as different as light was from dark. He was perfectly sure that Mr. Hill would prove in the future as he had done in the past—that he was quite capable of discharging the duties connected with the important office which he filled.

The resolution was unanimously agreed to.

Mr. A. W. HILL, Secretary, in a few appropriate remarks, thanked the Council for his re-election.

Mr. J. ROALFE COX said that, owing to the lamentable event they had to deplore in the death of Mr. Harpley, a vacancy had occurred in the Council. It was in the power of the Council temporarily to fill that vacancy, and he had great pleasure in nominating, as a fit and proper person, Mr. Banham, whose name happened to appear next for election on the Council.

Mr. DRAY seconded the nomination.

Mr. JAS. F. SIMPSON doubted whether such a nomination could be made at that meeting, and he moved as an amendment that the vacancy be not refilled.

Mr. GREAVES seconded the amendment.

Sir HENRY SIMPSON was of opinion that the election of a new member to the Council at that meeting would be *ultra vires*.

Mr. SIMCOCKS suggested that the consideration of the question be postponed until the next quarterly meeting in July.

Mr. J. ROALFE COX said that if such a course were adopted he would withdraw his resolution.

Mr. PETER TAYLOR seconded Mr. Simcocks' proposal, which was agreed to.

Election of Treasurer.

Sir HENRY SIMPSON said that hitherto the Council had annually re-elected the Treasurer. He was instructed, however, that such a course was not necessary. The office was a permanent one, unless the Council chose to remove the officer appointed. He should be sorry for the Council to separate without an expression of their high appreciation of the Treasurer's services. Everyone who knew Mr. Dray knew what an indefatigable man he was in looking after the finances of the College. He trusted the Treasurer would see his way to retain the office he had held for so many years, which would undoubtedly not only be to the advantage of every member of the Council, but to the profession at large. He had great pleasure in proposing a hearty vote of thanks to Mr. Dray for the manner in which he had performed his duties as Treasurer to the Royal College during the past year.

Mr. GREAVES seconded the motion, which was carried unanimously.

Mr. DRAY thanked Sir Henry Simpson for his very complimentary remarks and the Council generally for the way in which they had indicated their appreciation of his services. Owing to his now getting into years he regretted that his health was rather uncertain, but if the Council would allow Mr. Wragg, who had kindly offered to act as his *locum tenens* should his health fail, to act for him, he would gladly continue in office.

Mr. JAS. F. SIMPSON gave notice that he should at the next meeting move the appointment of a Committee to be called "The Report and Election Committee." He should suggest that, amongst other duties, the Committee should arrange the names upon the voting papers, and their disposal.

Mr. J. ROALFE COX said that much had been said in Mr. Hill's praise; and during that very especial time of jubilation, when in all quarters compliments had been paid and honours bestowed, he hoped the Council would not be content with merely empty words. The College, he thought, could well afford it, and he would suggest that some honorarium, as a memento, which would be highly appreciated, be presented to Mr. Hill in recognition of his services and good faith to the profession generally.

The subject was referred to the Finance Committee.

Mr. JAS. F. SIMPSON moved a vote of thanks to the Chairman, which was seconded by Mr. MULVEY, and agreed to.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

THIS Society held an ordinary general meeting on May 3rd, Mr. Samson, vice-president, being in the chair. The Fellows present were Professors Axe, and Shave, Messrs. Caton, Elworthy, Farrow, Herron, Hunting, Hurndall, Lowe, Moore, Mulvey, Oatway, Overed, Rickards, Rogers, Rogerson, Roots, Rowe, Shaw, Singleton, Willis, Woodger, and the honorary secretary, and Messrs. Morgan Evans, A. E. Gostling, and Somers attended as visitors.

Letters were received from Professor Walley and Mr. J. Roalfe Cox regretting their inability to attend. The minutes of the previous meeting having been read and confirmed, Mr. William Shaw, M.R.C.V.S., of Stoke Newington, was unanimously elected a Fellow of the Society.

The consideration of Mr. Hunting's paper on "Hereditary Disease and Veterinary Opinion" was then proceeded with, and Mr. VILLAR, after reading a telegram from the President, who was unavoidably prevented from being present, said that he could not agree with the essayist, as to there being no form of hock predisposed to "curb," he being of opinion that the formation known as "Sickle-hock" is especially liable to become affected. As regards the transmissibility of Spavin he had known an entire horse affected with that disease, who produced many foals which developed Spavins at an early age. Another entire horse which he knew had a large bony enlargement of the coronet, the result of a "fractured pastern"; he got a number of foals, but none of them had become affected with Ringbones; and yet another stallion had Canker in all four of his feet, but up to the present none of his stock, although they had been at work for some years, were suffering from Canker.

Mr. MULVEY could not consider Grease as a form of Eczema, and related the case of a stallion which had "Grease" in three of his legs, and almost all his progeny suffered from that disease.

Mr. CATON bore out Mr. Mulvey's view of the transmissibility of Grease, but could not agree with Mr. Hunting as to Curbs being non-hereditary, and in proof quoted the case of a horse now living which had what is known as "Curby-hocks," and ninety per cent. of whose foals become affected with Curb. That Spavin and Roaring are hereditary diseases he had personal proof.

Mr. SAMSON pointed out the necessity of distinguishing between "simple" and "specific" Ophthalmia in stallions exhibited at shows; the specific form was undoubtedly hereditary, but simple Ophthalmia was of no consequence. He would disqualify any horse having such malformed hocks as to predispose to Curb, as he was convinced of the hereditary nature of that very troublesome malady, as he was also of the transmissibility of conformation of the feet, and he considered an entire horse with very flat feet should not be used at stud, and quoted an instance where a stallion who had a "clubbed" off fore foot, which, to his knowledge, got three foals with "clubbed" off fore feet. He (Mr. Samson) held a very strong opinion that "Stringhalt" is hereditary.

Mr. ROGERSON considered too much stress had been laid on the hereditary nature of Ringbone ; unquestionably that disease was at times hereditary, but he thought in far more cases it was a direct result of concussion on our hard roads.

Professor AXE very much regretted that he had not had the opportunity of listening to Mr. Hunting's paper. He was sure, however, that Mr. Hunting's large experience would enable him to present the subject treated of in an interesting and instructive light. The question of hereditary disease had been brought forward at a most opportune moment, inasmuch as it had for some time past attracted a considerable amount of attention from horse-breeders and other persons specially interested in the welfare of our studs. The subject was one of supreme importance, and deserved all the consideration the veterinary profession could bestow upon it. If there was one fact more clearly realised and acknowledged by the veterinary profession than another it was the truth of heredity in relation to disease—the power of animals inheriting defects to transmit those defects to their progeny. It was also interesting and important to bear in mind that not only were diseases and deformities of descent capable of transmission, but others accidentally induced were likewise communicable from parent to offspring. He had that morning been speaking with Mr. Clement Stephenson, of Newcastle, than whom he knew no more shrewd observer, and he had told him (Professor Axe) that he had known mutilations inflicted on the ears of animals for the purpose of "marking" to be handed down from the parent to the offspring. About two years ago a large horse-breeder in Lincolnshire called his (Professor Axe's) attention to a colt which had sustained considerable damage to the off-shoulder resulting in deformity. A few weeks ago the same gentleman had informed him that one of the colts sired by this animal had inherited the defect acquired by the parent. This, he thought, was the kind of evidence which was so much to be desired, and which the profession should seek to extend. Mr. Hunting submits the question, "Can we determine merely by the symptoms when a disease is hereditary, and when it is not?" He (Prof. Axe) thought we could not, but there were many cases in which the evidence of heredity was very strongly marked, if not actually conclusive. He referred to those cases of multiple exostoses—the co-existence of splints and spavins, and, above all, to the symmetry of bony growths and articular diseases in corresponding limbs.

It not unfrequently happened that splints appeared on the legs of young horses, and were found to occupy precisely the same position on one limb as on the other ; they were, moreover, the same size and form, and, in a large number of cases, sprung up during the growth of the animal without inducing lameness, and, indeed, appeared to have become a fixed part of the organisation. Examples of this kind he regarded as bearing all the manifestations of hereditary transmission. Those, however, who have the best interests of our horse population at heart will not stop to demand such evidence as this, but must be prepared to condemn as unfitted for stud purposes all animals suffering from disease known by experience of another kind to be hereditary. To do a great right may necessitate the infliction of a little wrong, and he is a poor and impotent legislator who would shrink from the latter alternative in the face of the vast benefits to be conferred on our horse population by prompt and vigorous measures of prevention.

In referring to the official action of veterinary surgeons at agricultural shows, Mr. Hunting had raised a very important question. No doubt it would be a great boon if the profession could be relieved from the responsibility attaching to the exercise of a strictly judicial function, but he (Professor Axe) should be very sorry indeed to see the profession relinquish its position until a higher authority had been set up. It was manifestly in the interest

of our horse stock, and in the interest of the country, that for the present at least the veterinary expert should continue to exercise a judicial control over the rewards of merit at our horse exhibitions.

Professor Axe urged the desirability of examining all stallions exhibited at shows, and awarding certificates of soundness to such as were found to be free from hereditary disease; by this means, he said, breeders would know what to use and what to reject. He would also like to see the same system adopted towards mares.

With one or two exceptions he agreed with the formula laid down by Mr. Hunting as to what should and what should not constitute unsoundness.

Mr. OATWAY said his experience showed him that Laminitis was not transmissible; a horse he knew named "Dundee" had Laminitis so badly that he had to be lifted on to his feet when a mare was brought to him. Another named "Billy Barlow" had it as badly; the last season that "Billy Barlow" served he got sixty foals; he knew many, and had owned several of these foals since they were grown up, and in no instance that he knew of had one been affected with Laminitis.

Mr. HUNTING in reply said, he felt that the members present had not done themselves justice; surely amongst all their experience some more facts might have been advanced, but he thanked Mr. Oatway for the fact that he had given, and if he had done nothing more than extract that one fact he should have felt that his paper had done some good. Professor Axe had raised the extremely important question of the transmissibilty of accidental injury. They had mutilations of all sorts, but these mutilations were, as a rule, not transmissible; but it was a question whether if an accident or a mutilation caused disease, that disease was not transmissible. He (Mr. Hunting) had arrived at the conclusion that although a little accident was not as a rule transmitted, an accident which caused a vital change in an animal might be transmitted. Dr. Laycock, of Edinburgh, said that a vital tendency once established in an animal continued to run its course, not only through that animal but through its offspring, until deflected by some other cause greater than itself.

What they wanted to get at was not whether a stallion was suffering from a disease which he got from his mother, but whether he would transmit that disease to his offspring. Of course evidence that a horse was suffering from a disease that his mother had was *prima facie* evidence that he would transmit it, but was not conclusive evidence.

With reference to Splint, only a day or two since he saw a case in which a four-year-old horse that had never done any work, developed two Splints without going lame; these Splints were both on the outside of the metacarpal bones, and they were both in exactly the same position. One could not account for the Splints except upon the hereditary principle. He should be rather inclined to regard all tendency to inflammation of the feet as hereditary.

One gentleman had said that he would not object to simple Ophthalmia; in the majority of cases it was impossible to tell simple Ophthalmia from constitutional Ophthalmia, and therefore, when he personally came across any case of Ophthalmia in a stallion, he should certainly reject for it. A friend of his, a visitor that evening, had told him of a case in which he bred from a mare that had had one eye completely knocked out. Strange to say its foal suffered from Amaurosis, and was perfectly blind; there may have been no connection whatever between the two circumstances, but he was inclined to think that the effects of accidents to organs of special sense were likely to be transmitted, and he should be inclined to advise judges to disqualify a horse that had an eye knocked out.

As to the second part of his subject, he would suggest that a veterinary

surgeon's opinion should be merely that of an expert; a surgeon might come across an animal suffering from a disease which he thought was transmissible, but the owner should have an opportunity to prove a clean bill of health in his horse's stock, and if he could do so that ought to over-ride the opinion of the veterinary expert. If show authorities would keep a careful record of what was said by surgeons about the stallions there would, in the course of time, be evidence which would enable the profession to form much better opinions. He objected to the proposal to give certificates of soundness to all the stallions in a show in which the veterinary officers failed to find any defect.

One gentleman had said that a sickle-shaped hock was predisposed to curb; he, personally, had not found more curbs in sickle-hocked horses than in straight-hocked horses. From his own experience he could not say whether broken-wind was hereditary; there were, no doubt, cases in which the foals of broken-winded mares had become broken-winded, but considering that many farmers reserved the "choice bits" of their hay, not for feeding their own cattle, but for the market, it was hardly to be wondered at that the colts went broken-winded; the wonder was that on some farms there were any horses that were not broken-winded.

They had had that evening two pieces of positive evidence from Messrs. Mulvey and Caton as to the hereditariness of "Grease," and he was prepared to accept it as a fact; in future he should look upon "Grease" as hereditary.

A vote of thanks was accorded Mr. Hunting for his paper.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

A QUARTERLY meeting of the members of this Association was held at the Swan Hotel, Stafford, on the 15th May, Mr. R. C. Trigger (Newcastle-under-Lyme), President, in the chair.

Also present.—Members: Messrs. W. Carless, Stafford; F. Blakeway, Stourbridge; H. Olver, Tamworth; W. S. Carless, Worcester; J. Coe, Stoke-on-Trent; F. C. Golden, Martham; J. M. Parker, Birmingham; W. Tailby, Birmingham; E. Hodgkinson, Uttoxeter; H. M. Stanley, Birmingham; J. Malcolm, Hon. Sec.

Visitors.—Messrs. T. Briggs, Bury; W. A. Taylor, E. Faulkener, T. Greaves, Manchester; W. Hunting, London; F. Bell, Ford, Salop; B. Kettle, Market Drayton; Tilstone, Stafford; E. H. Croydon, Newcastle-under-Lyme.

Letters of apology were announced by the Hon. Sec. from Sir Henry Simpson; Professor Pritchard, London; Professor Walley, Edinburgh; Professor Williams; Professor Brown, C.B.; Dr. G. Fleming, C.B., London; Mr. T. Chambers, one of the Vice-Presidents; Messrs. A. Over, Rugby; G. H. Pyatt, F. J. Pyatt, Nottingham; F. Wragg, London; Lewis, Crewe; Capt. Russell, Grantham; etc., etc.

Having entertained the company at luncheon, the President delivered his

Inaugural Address.

GENTLEMEN,—I must preface the few remarks I have this day to make with a very hearty expression of my thanks to you for the honour you have conferred upon me in unanimously electing me your President for the ensuing year.

I feel deeply sensible that you have conferred upon me the highest honour that you have to bestow, and it will be my earnest endeavour to prove myself worthy of the trust you have reposed in me. I can assure you that it is my wish to spare neither time, trouble, nor expense in the maintenance of the dignity of my office. I have received from members of this Society

many kindnesses, and I am sure that, in my new position, I may claim with the greatest confidence from each of you, for myself and colleagues, that same courtesy and consideration which has ever been accorded to our predecessors in office, and in this assurance I venture to look forward to a pleasant year of office, and to indulge a hope that at the end of that time the very firm basis upon which the Midland Counties Society now stands may be, if possible, made stronger and firmer still, that many personal friendships may be cemented, and that, when we meet at these scientific gatherings, the feeling of good fellowship and kindness that here exists may be carried back with us into private life and every-day practice.

The observations that I propose to make this day will be entirely of a practical character, and will be chiefly glances at subjects that I think are of interest to us at the present day.

Turning, then, for a moment to our Society, it is indeed pleasing to be able to congratulate you very heartily upon its present position. Viewed from a scientific point of view, which is, undoubtedly, its most important aspect, we find that we have had some excellent and highly instructive papers read before us—papers which have led to excellent discussions at the time, and I am sure have furnished food for reflection afterwards, and which it has been impossible to take part in and think over without gaining some benefit.

From a social point of view, I do earnestly venture to hope that this Society is calculated to impart a higher and better tone to its members than once existed, and I feel assured that in this respect very much has been already done.

Our position, from a pecuniary point, is eminently satisfactory, and strongly illustrates the adage that "union is strength," and shows what may readily be done when men work together for the common good.

You all know, gentlemen, what a very nominal annual subscription we pay as members of this Association, and yet out of these small sums—thanks to our having had an excellent Treasurer and Secretaries, who have taken the onerous duties in an honorary character, and conducted them on the most efficient and economic principles—we have been able, within the past year or two, to present to the Building Fund of the Royal Veterinary College no less a sum than £100.

This, gentlemen, is a handsome sum, and one of which we may well be proud; but when I add to this that, after this heavy draw on our exchequer, we have still at our bankers a balance to our credit of no less a sum than £117 17s., I think that you will agree with me that on our financial position we may heartily congratulate ourselves, and once more repeat, "unity is strength."

No arguments in favour of ours and kindred societies can be necessary. If they were, a glance at what we have been able to do should be sufficient to convince the most sceptical. Every member of our profession owes it to himself and to his profession that he should be a member of one society at least, and that he should do what he can, in whatever capacity may offer, to enhance the interests of that society. It is as much the duty of a veterinary surgeon, as it is that he should keep himself well versed in the veterinary and medical literature of the day; and here let me address a few words specially to our younger members, and say how pleased we are to welcome them into our societies, and also how anxious to see them taking their part in our discussions. No one in every-day practice but who sees something of interest; and even if he feels diffidence about discussion, he will find that if he will bring morbid specimens to lay before us he will not only be assisting the Society, but will himself gain confidence and experience thereby.

Passing on beyond the limits of our Society into the world of the profession generally, we see a very different state of affairs to that which was in existence even a few years ago.

The veterinary profession, gentlemen, is progressing, and that rapidly, and is certainly and surely taking that position to which it is justly entitled. Socially the highest honours are now open to its members. The President of the Royal College of Veterinary Surgeons for the past year has received the honour of knighthood; and here we may pause to note that this gentleman, who has attained the highest position the profession can bestow, is a member of the Midland Counties Veterinary Association, and although in his case the honour conferred by royalty is an individual one, I take it that it reflects credit upon the profession generally. Upon another gentleman—Professor Brown—has been conferred the high honour of Companion of the Bath, and, considering the distinguished services that he has rendered to science, the honour was well deserved. Presentations at Court have lately been somewhat numerous, chiefly, it is true, amongst army veterinary surgeons, but not entirely, and therefore it is reasonable to suppose that such honours are open to general practitioners, supposing they render themselves eminent either as authors, scientific discoverers, or by other legitimate means. My object in mentioning these honours is to illustrate my remark that our profession was progressing. Only a short time ago the fact of a man being a veterinary surgeon would have been sufficient alone to act as a bar to his obtaining any social distinction. I think you will agree that it behoves us by our conduct to show to the public that we are quite capable of taking a high position and of maintaining it with the same dignity as other learned professions. For a large measure of the advancement here alluded to the profession is indebted to Dr. George Fleming. He has worked for us with untiring zeal, is still working in the same good cause, and to him belongs a large measure of the credit.

In other respects, too, we have achieved some successes, perhaps more especially with regard to the Contagious Diseases (Animals) Act. Much has lately been done; more and very important matter, in my opinion, remains to be done.

Comparatively a few years ago, and only very few diseases came under this Act—probably only Cattle Plagues, Pleuro-pneumonia, and Foot-and-mouth Diseases; since then we have had added Glanders and Farcy, Swine Fever, Sheep Scab, and others; and more lately still, Rabies and Anthrax; and here let us note the frightful dimensions that Rabies has attained, and how necessary it was that it should be the subject of legislation. Until within the last few years we seldom saw a case—they were of rare occurrence; now they are unfortunately common. The measures that we are enabled to adopt are not sufficient—securing dogs during an outbreak in the jurisdiction of one Local Authority and not in the next. Having them muzzled in one little town and not outside its boundary is simply playing with the matter. I earnestly exhort you all to agitate, whenever opportunity offers, until you have secured that all dogs over the United Kingdom shall be secured for at least six months; better still if you can make it twelve. It is a duty which our profession owes to the public generally. I am quite aware that a certain portion of the press write down this matter as false alarm, etc., and assert that the dogs are not rabid—that people who are bitten are frightened into illness as a result of mental impressions. Well, gentlemen, these arguments, if such they can be called, are easily refuted and their absurdity shown. "Mental impressions will not produce Rabies in horses, cattle, and sheep that have been bitten," and I have unfortunately seen too many of these cases to leave room for doubt as to the nature of the malady that exists amongst our dogs. Much more might be

said on this subject. We have time to-day only to just notice the leading topics, and I take it that this is one of them.

Foot-and-mouth Disease, thanks to repressive measures, is now happily almost a thing of the past. Swine Fever will not be stamped out so long as present legislation on the subject exists. More decisive stamping-out measures must be adopted. It is a mistake making the slaughter question optional with Local Authorities.

In Pleuro-pneumonia, as you are aware, decisive stamping-out measures are now the order of the day, and compulsory slaughter of the whole herd where the disease appears is insisted upon, and such vigorous measures will, I believe, eventually be crowned with success. The measures we are enabled to mete out to Glanders and Farcy might be more satisfactory. Glanders, of course, is vigorously dealt with, and, in my opinion, Farcy should be placed upon all fours with it; and whilst on this subject let me commend to the notice of those who have not yet seen it an excellent little work, recently published—"Hunting on Glanders." It is at a merely nominal price, and is a pocket companion that every veterinary surgeon should possess, as it contains a quantity of valuable information in a concise form.

So far, in considering the Contagious Diseases Act, we have noticed chiefly what it has done. I now come to a subject of paramount importance as to what it should do with regard to Tuberculosis. To bring this malady under the Act is, in my opinion, one of the crying necessities of the day. This dire affection devastates our herds to perhaps a greater extent than any other disease that we could mention. It is not so self-assertive as some others, being of an insidious character; and herein lies its chief danger. It has a frightful hold upon our stock. As you are aware, it is hereditary to the last degree. Many of our cows are kept in ill-ventilated shippens, under circumstances entirely favourable to its development; and when it exists, although we are well aware of the danger to human beings taking the milk when once the mammary glands of the cow become the subject of Tubercle, we are absolutely powerless to prevent the mischief that we see going on, because it entirely depends upon the owner whether the animal affected is slaughtered or not; and as such animals are generally extremely lean and, unfortunately, heavy milkers, of course the probabilities are much against this course being adopted. Consider for a moment the ravages caused yearly in our herds by this disease. Every year, in my district anyway, many farmers lose some percentage of their stock, and I should be much within the mark if I were to say that for many years for every one animal that has been lost of a recognised contagious disease, twenty at least have fallen victims to Tuberculosis. I feel sure that gentlemen present having extensive mixed practices can confirm me in this view, and I therefore urge upon the veterinary profession to use its undoubtedly great influence to bring this terrible malady within the scope of legislation.

Another point in the same subject (that is, legislation) is the question of the Dairies and Milk Shops Act. The inspections should either be made by a veterinary surgeon or else under the supervision of one, and this will be more especially necessary should the views expressed above on Tuberculosis ever be carried into effect. Lastly, on this subject, I would just refer to the inspection of meat. In this matter the veterinary surgeon is the proper person to appeal to. It should not be in the hands of sanitary inspectors and medical officers, who have frequently had but little experience of such cases; and freely I admit that I have usually found medical officers anxious to avail themselves of veterinary assistance, but this may not be so in all cases, and it would be well that it should be recognised as the functions of the veterinary surgeon.

The next matter on which I propose to ask your attention for a few moments

only is one that cannot fail to be of interest to you all, and it is one of which in these latter days we hear, unfortunately, too much. It is the "liability of veterinary surgeons"—the legal liabilities for their acts. In connection with this subject I may remark, as you all know, we have in our profession a very excellent Society, the Benevolent and Defence Association, and to this Association I say unhesitatingly it is the duty of every member of the profession to belong and subscribe. It is capable, if viewed from its benevolent aspect alone, of doing immense good, and as such is worthy of every support. As a Defence Society it may also be a very great assistance, and in case of any member of it becoming, as he undoubtedly may be, liable for damages, either by carelessness of his servants, such as allowing one horse to get loose and kick another, or in many ways where accidents occur that might readily have been prevented, as a subscriber to this Society he would be undoubtedly entitled to ask it to bear the loss, against which he had practically insured himself. But I am afraid this Society, in the best-intentioned manner possible, and perhaps with a desire to settle cases with as small a draw upon the exchequer as may be, has deviated somewhat from the course of pure defence; anyway, there is a wide impression abroad that it is becoming too much of a settling society. As you are aware, many cases that arise where claims are made can be settled for a very nominal sum. Many of the claimants know perfectly well that they have no reasonable prospect of obtaining damages at law, and are, if I may use the expression, simply "trying it on," and have no intention of proceeding to extremities. They are, of course, only too pleased to accept any pecuniary offer that may be made, and it is quite true that many cases may readily be settled for very far less than they could be defended for, even if you won your case all round. But, I ask, is this in the best interests of the profession? These settlements naturally become common topics, and do they not lead to other claims being made, of which nothing would ever have been heard? More especially here may I allude to the case of horses being pricked in shoeing in veterinary forges. It seems to me to be becoming quite common, more especially in some districts, to recognise liability for such injuries, and to give compensation, and this in the face of such authorities as we have, which are certainly not numerous, on the subject. So long as you employ steady, skilful workmen, and they are perfectly sober, no liability, in my opinion, rests on the veterinary surgeon. The owner must show negligence, want of some ordinary care, or of some precaution that might have been observed; unless he can do this, he has no claim against the owner of the forge. Shoeing is one of the risks of horse-keeping. A horse cannot be shod without a certain amount of risk, and the owner of the horse cannot transfer that risk to your shoulders unless he can show that you were wanting in some proper precaution. I recollect a case being tried some years ago in London, in which it was ruled that the owner of the horse had failed to show negligence, and therefore must fail in his action. Would it not be better, instead of settling a lot of these little cases, to take one case, defend it on its own merits, and get a ruling on the matter? We could not be worse off than in the uncertain state we now are; we may be very much better, and I am quite sure the members of the profession would subscribe liberally to find funds for such a case if they thought they were drawing too heavily on the Defence Association. It is cruelly unjust to suppose that we can be pecuniarily liable for that which we have no reasonable power of preventing. In advancing the above, I would add that, if a veterinary surgeon found that his men had been guilty of negligence, he would honourably settle the matter, or ask the Defence Association to do so for him; this would only be reasonable and just.

With regard to the liability of a veterinary surgeon in ordinary practice, it is more imaginary than real. The same remarks in reference to shoeing will

readily apply here. Negligence or want of skill must be proved before any liability can be brought home. Use every precaution; always point out to owners that a certain amount of risk attends any operation, however simple. Above all, and before all, be most careful and guarded in your remarks when you hear ill-luck has followed some operation of a brother practitioner. In such cases treat your neighbour as you would wish that he should treat you under similar circumstances, and you will hear very little of liability in such cases. Mishaps will happen to anyone, especially in large business establishments. It therefore, as I before said, behoves every one of you to belong to such an Association as the Benevolent and Defence, when, if you do unfortunately, through some unforeseen circumstances, find yourselves liable for damages, you will be justly entitled to ask that Society to bear your loss.

Gentlemen, I do not propose to detain you longer to-day. I would simply remark that I should like to see more decisive steps taken to make the pupilage of veterinary students compulsory, as I believe it is in the best interests of the profession that it should be so; and as we have yet to be laid before us a scientific paper on a subject which promises to be of unusual interest, I shall close my paper by again thanking you for the honour conferred upon me, for your attendances here to-day, and, I may add, for the courteous hearing you have given me.

Mr. CARLESS read the following paper on this subject:—

Some of the Pernicious Effects of Sewage on Animal Life.

I will firstly trace the sewage from its origin, and detail the common method of dealing with it by the Local Authorities of the district, and afterwards describe its ill-effects on the various animals of our farms, concluding with a few hints as to the best way of dealing with the evil.

When a corporate body in a city or borough have been made alive to the necessity of dealing with the effete matter of the place, their first consideration is, How can it be dealt with in the easiest and most economical way? If they are blessed with waterworks and have a good supply, the usual method is by flushing and conveying away in carriers to some convenient place—generally a sewage farm, over which it is dispersed as a fertiliser, the surplus fluid finding its way into the natural watercourses contiguous thereto.

Now, as long as the land upon which it is thrown is poor and lumpy, all goes on well and the result is satisfactory; but when it becomes surcharged the mischief begins, the vegetation on the land becomes strong and foul, and the superabundant fluid, when it finds its way into the brook, is not properly filtered, and as a consequence contains a greater or less amount of decomposing organic matter, which is prejudicial to animal life.

I have seen some streams so polluted that even a frog could not live in it, and the vegetation completely destroyed for a considerable distance. The analysis of the water in these streams shows a considerable amount of decomposing organic matter, free ammonia, nitrates, and chloride of sodium, such water being quite unfit for drinking purposes.

Now, as a matter of course, animals that are solely dependent upon these polluted streams for their water supply cannot very long retain a vigorous state. In my experience cows in full milk are soonest affected. This may be that they consume more of the water. Young cattle, horses, and sheep are all alike affected by it, and, if they do not actually die, their condition is so reduced that they are rendered both useless and unprofitable.

The first evidence of attack is an unthrifty look, with a very sensitive skin, the coat standing with every change of the weather, and slight rigors, which become more frequent as the animal gets worse. Then follows emaciation and frequent sharp attacks of diarrhœa. At this stage of the malady the animal has a depraved appetite, and is often seen licking and even eating soil

It will be found standing with legs all together, back arched, sides fallen in, and when made to move does so with reluctance.

The appetite now becomes very fastidious, and there is a perpetual thirst, which is soon followed by an acute form of diarrhœa, which terminates fatally in from two to five weeks. It is noticed by the herdsman that when an animal is once attacked with this peculiar form of Enteric Fever it prefers the polluted water to any other.

I have had several opportunities of making *post-mortem* examinations of animals which have died from this cause, and have invariably found a marked absence of disease in any of the viscera, except the mucous lining membrane of the fourth stomach and bowels. This has always been considerably thickened and of a dirty greyish hue; the contents entirely fluid and of a coffee colour; the mysenteric glands are enlarged, and when cut into are seen to be considerably congested.

I have not seen any fatal cases from this cause in horses. I have seen them reduced to great extremes, but when removed from its influence they have always made a good recovery.

Sheep that have been subjected to the evils of sewage water suffer considerably in their condition, both of flesh and wool; and if ewes are tainted with it at lambing time, there is always a considerable fatality from congestion of the uterus.

I have very grave suspicion that Tuberculosis in cattle may sometimes have its origin in this system of land irrigation, but am not prepared at present to state it as a fact.

Now, gentlemen, this state of things, which I have very feebly described, ought not to exist in this advanced period of sanitation, and we as veterinary surgeons should do all we can to remedy it, to do which we must be able to show that the generally adopted practice of dealing with the sewage is dangerous to animal life, and through them to human life, by consumption of milk, etc., etc.

As I said before, the removal of effete matter from our cities and towns is generally done by flushing with water and gravitation, the lowest available spot being selected for its deposit. This, I say, is bad economy, as the land soon becomes surcharged, and as a consequence the sewage must find its way into the streams.

I have found that during the summer months, when it is so necessary to flush and cleanse, thereby increasing the volume of sewage, that the smallest possible area is retained uncropped to receive this extra quantity, and as a consequence it cannot percolate, but runs over the land into the streams.

Now, I maintain that water meadows and low pasture lands do not require sewage irrigation, and therefore it is in a great measure wasted; whereas, if it can be transferred to the high, sterile, and cold lands, it would prove a mine of wealth to our farmer friends. This could only be done in one of two ways—either by establishing pumping stations, which would be an expensive method, or by collecting the solids and turning the fluids directly into the large streams.

The Rochdale system is, in my opinion, by far the most economical and complete, and should be adopted wherever it can be.

I am afraid, gentlemen, that you will vote this a very dirty subject, but I shall not apologise for bringing it forward, as I am convinced such matters ought to be well considered by us all.

I will conclude by thanking you very much for your patient hearing, and hope that a discussion will ensue that will be beneficial to all of us.

The PRESIDENT, in inviting discussion on the subject, characterised the paper as an eminently practical and valuable one.

(*To be continued.*)

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held in the County Hotel, Newcastle-on-Tyne, on May 25th, the President, Mr. D. Dudgeon, in the chair.

Present.—Messrs. J. Gofton, North Shields; A. Hunter, H. Hunter, J. W. T. Moore, W. A. Hancock, C. Stephenson, G. Elphick, Wm. Hunter, Newcastle-on-Tyne; A. Chivas, Corbridge; W. Grieve, Blaydon; J. E. Tudor, South Shields; and the Secretary.

Visitors.—Professor McFadyean and Mr. F. T. Finney.

Apologies for non-attendance were received from Messrs. W. J. Mulvey, J. E. Peele, E. Bennett, J. B. Nesbitt, W. T. Briggs, and C. Gresty.

Mr. H. Gelsthorpe, of Darlington, was unanimously elected a member.

Mr. G. ELPHICK, Chairman of the Provisional Committee of the National Veterinary Medical Association, informed the members that the meetings of this Association would be held in Newcastle-on-Tyne on the 17th and 18th July.

Mr. H. HUNTER proposed, and Mr. C. STEPHENSON seconded, that Prof. McFadyean be elected an Honorary Associate, which was carried unanimously.

Prof. MCFADYEAN thanked the members for the honour conferred upon him.

Mr. H. HUNTER then referred to the loss the Society had sustained in the death of Mr. H. Peele, of Hartlepool. He said that Mr. Peele was a college friend of his—a thoroughly kind and genial man, and one that would be missed by the members. He concluded by moving that the Secretary send a vote of condolence to Mrs. Peele.

Mr. C. STEPHENSON and the PRESIDENT also referred to the sterling value of Mr. Peele. The motion was carried *nem. con.*

Prof. MCFADYEAN read a paper on "Swine Fever," dealing especially with the bowel lesions in a most able and exhaustive manner, illustrating them with diagrams and microscopic specimens.

An interesting discussion followed, in which Messrs. C. Stephenson, J. W. T. Moore, H. Hunter, W. Grieve, and the President took part.

The next meeting is to be held at Sunderland.

G. R. DUDGEON, *Hon. Sec.*

GLASGOW VETERINARY COLLEGE.

THE winter session of this institution terminated on the 17th May, and on the 18th, 19th, 23rd, and 24th the oral examinations of the Royal College of Veterinary Surgeons were conducted within the Museum of the College. The candidates for diploma were also subjected to a rigid practical examination on horses, cattle, and sheep, selected and brought to the College for that purpose. Thirty gentlemen presented themselves for the first or theoretical part of the final examination, and of this number twenty-two were successful—Mr. William Robb passing with "great credit." Nineteen gentlemen presented themselves for the second or practical part of the final examination, and of these the following succeeded in obtaining the diploma of the Royal College of Veterinary Surgeons, viz.:—

Messrs. John Ferguson, Alyth, Perthshire; Robert Hamilton, Lanark; William B. Gardner, Ballymena; Matthew Graham, Stepps, Glasgow; Henry D. Young, Stewarton; William D. Smith, Dundalk; Alexander B. Baird, Rutherglen; John M'Kerlie, Stranraer; John Macfarlane, Gartmore; Thomas J. Campbell, Stranraer; James D. Miller, Ardgour, Argyleshire; John Forbes, Bellshill; David Imrie, Strathbungo; Alfred Mackenzie, Govan; James Shade, Glasgow; James M. Stewart, Paisley; Frederick G. Warmington, Shrewley, Warwickshire; and Thomas B. Hamilton, Fordingbridge, Salisbury. Messrs. James Borrowman, Auchtermuchty; William Robb, Glasgow; and Andrew K. Hart, Glasgow, passed the theoretical part of the examina-

tion, but were (in accordance with the regulations) prevented from completing their practical examination on account of their being under age.

Nineteen students presented themselves for the "B" or second examination, and the following passed, viz. :—

Messrs. Joseph M. Graham, Londonderry; John W. Peatt, Rockcorry, Monaghan; James Gregg, Dromara, County Down; Matthew Wilson, Mendota, Illinois; John Watson, Glasgow; James M'Dougall, Helensburgh; David Warnock, Glasgow; William E. Maxwell, Dundalk, County Louth; James N. Beevor, Brighton; Samuel R. Thompson, Dundrod, County Antrim; Charles J. Dunn, Glasgow; and Hugh Ross, Invergordon, Rossshire.

The following students passed their first professional examination, viz. :—

Messrs. J. K. Bruce, Alyth, Perthshire; Robert Weir, Carstairs, Lanarkshire; William Logan, Overton, Ayrshire; W. H. Davidson, Glasgow; Archibald Renfrew, Hurlet; T. A. Trotter, Falkland, Fifeshire; William Erskine, Bridge of Weir; W. M'Murrich, Helensburgh; D. Clerk, Kilmartin, Argyleshire; George Waddell, Glasgow; James Bishop, Glasgow; Joseph Thompson, Ballynahinch, County Down; P. J. Austen, Lurgan, County Armagh; C. A. Squair, Kildrummie, Nairnshire; P. Connolly, Warrenpoint, County Down; James Kirk, Dumfries; Alexander Hill, Ballynahinch, County Down; William Ledger, Lisnaskea, County Fermanagh; and P. Gillespie, Strathbungo, Lanarkshire.

Prize List.

Medals granted by the Highland and Agricultural Society of Scotland; the late Professor Allan Thomson, of London; Mr. Thomas Campbell, F.R.C.V.S., Kirkcudbright; and Principal M'Call; and certificates of merit by the college were awarded in the different branches of study as follows:—Horse pathology (written examination), silver medal (H. and A. S. of S.), Mr. John Ferguson. First-class certificates—Messrs. Stewart, M'Kerlie, Borrowman, and Imrie. Second-class certificates—Messrs. M'Farlane, Hart, and Robb. Cattle pathology (written examination), silver medal (H. and A. S. of S.)—Mr. James M. Stewart. First-class certificates—Messrs. Imrie, Ferguson, Hart, and Robb. Second-class certificates—Messrs. M'Kerlie, Borrowman, and Miller. Morbid anatomy (written examination). First-class certificates—Messrs. Hart and Borrowman. Second-class certificates—Messrs. Ferguson, Imrie, Forbes, M'Kerlie, Robb, and Welsh. Practical examination of horses as to age, soundness, operations, etc., gold medal (Principal M'Call), Mr. Matthew Graham. First-class certificate—Mr. Stewart. Second-class certificate—Mr. M'Kenzie. Practical examination of cattle and sheep as to soundness, age, operations, etc., gold medal (Mr. Campbell), Mr. W. D. Smith. First-class certificate—Mr. M'Kerlie. Second-class certificate—Mr. Robert Hamilton. Anatomy (special and comparative) medallist—Mr. David Warnock. First-class certificate—Messrs. Thompson and Gregg. Second-class certificates—Messrs. Peatt, Graham, M'Dougall, and Wilson. Physiology (written examination), medallist—Mr. James Gregg. First-class certificates—Messrs. Warnock and Thompson. Second-class certificates—Messrs. Ross, M'Dougall, Dunn, and Peatt. Best professional examination in anatomy, gold medal (the late Professor Allan Thomson)—Mr. David Warnock. Junior Anatomy—Medallist, Mr. K. J. Bruce. First-class certificates—Messrs. Trotter, Renfrew, Kirk, and Davidson. Second-class certificates—Messrs. Ledger, Austin, Erskine, Weir, and Bishop. Chemistry, medallist, Mr. Joseph Kirk. First-class certificates—Messrs. Austin, Davidson, Erskine, Renfrew, Trotter, and Waddell. Second-class certificates—Messrs. Bruce, Clerk, Logan, and M'Murrich. Botany (written examination), medallist—Mr. T. A. Trotter. First-class certificates—Messrs. Austin, Bruce, Logan, Waddell, and Kirk. Second-class certificates—Messrs. Erskine, Davidson, and

Renfrew. Therapeutics, special prize, consisting of a case of instruments, Mr. Robert Hamilton. Principal M'Call's bursary of £20, or a gold medal the value of that amount, for the student who obtained the highest aggregate marks in his first and second professional examinations before the Board of Examiners, was awarded to Mr. David Warnock.

At the close of the examinations, the Secretary to the Board of Examiners intimated that Messrs. Wilson, Maxwell, Graham, Thompson, Bruce, Logan, and Connolly had passed with "great credit," and Mr. David Warnock with "very great credit."

ROYAL AGRICULTURAL SOCIETY.

At the monthly Council Meeting, held on June 6th, Sir John Thorold reported that Professor Brown had presented the following report :—

Pleuro-pneumonia.—During the first eight weeks of the present quarter there have been eighty fresh outbreaks of this disease reported in Great Britain, of which forty-seven were in England and thirty-three in Scotland. This shows a slight increase in England as compared with the corresponding period of last year, but a very marked decrease in Scotland, where the disease was unusually prevalent last year. The returns published in the *London Gazette* show that, during the eight weeks above referred to, 307 cattle were attacked with Pleuro-pneumonia in Great Britain. Of these 196 were in England and 111 in Scotland, 298 were killed and nine died. In addition to this, 1,745 healthy cattle, which had been in association with the diseased, were slaughtered on the infected premises, or removed elsewhere for slaughter.

Swine Fever.—This disease is again increasing in this country. During the eight weeks ending May 26th, there were 1,082 fresh outbreaks reported, a greater number than was reported in the whole of the preceding three months. The number of swine attacked during the past two months has been 5,680, of which 2,945 were killed, 1,983 died, while only 305 recovered, and 563 diseased swine remained alive at the date of the last published returns.

Anthrax.—There have been forty-four outbreaks of this disease reported in Great Britain during the past two months, and eighty-one animals attacked by it; thirty-five of the outbreaks and sixty-seven of the animals attacked were in England, while nine outbreaks, in which fourteen animals were affected, occurred in Scotland.

The notice which was given in the report of the Council to the General Meeting, suggesting that diseased animals, or parts of dead animals affected with disease, might be sent to the Royal Veterinary College for the purpose of improving the tuition in cattle pathology, has already produced good results. Several veterinary surgeons and some of the members of the Society have sent animals and specimens. During the last month we have had cases of Ringworm in calves, scrofulous diseases in the joints of young cattle, and several cases of *Actinomycosis*, some of them of very peculiar form. Cases of Pericarditis and several instances of tuberculous udder in cows have been received, and cases of malignant disease of the udder in ewes which have caused very considerable loss in some parts of Lincolnshire and Hertfordshire.

In regard to the disease which is described as *Actinomycosis*, so called in consequence of its being associated with a fungus which grows in a rayed form branching out from a centre, it is necessary to observe that this disease has proved by recent inquiry to be extensively prevalent in various parts of the country, and in the whole of the Fen districts of Lincoln, Norfolk, Suffolk, Cambridge, and also in other parts. *Actinomycosis* has been detected in diseases which are described as wens, sitfasts, clyers, cancer, and also scirrhus and various forms of disease of the mouth, which are all classed together as Stomatitis. The malady is very malignant. The fungus penetrates

even into the bony tissues, and in many cases causes the death of the animal by invading some of the more vital organs. The subject forms part of the inquiry which Dr. Crookshank is undertaking in the laboratory of King's College, and it is proposed to submit a report to the Society, giving a history of the disease and its state of prevalence in the different parts of England.

Professor Brown had also submitted a report, prepared at his request by Mr. James Brodie Gresswell, M.R.C.V.S., of Louth, as to an outbreak of disease among cattle on the farmstead occupied by Mr. George Fowler, at Elsham, which appeared to be due to poisoning by some plant which grows in the paddocks, probably *Solanum dulcamara* (deadly nightshade). *Bryonia dioica* (wild bryony), an enormous quantity of which grows in the paddocks, is not considered by Mr. Carruthers to be poisonous.

Sir John Thorold further reported that a total of ninety-one entries had been received for the horse-shoeing competition—forty-seven in Class 1 for hunters, and forty-four in Class 2 for agricultural horses. A letter had been received from Mr. Frederick Low, accepting the post of provincial veterinary surgeon for the county of Norfolk. The committee announced with regret the death of their colleague, Mr. M. J. Harpley, and recommended that the president for the time being of the Royal College of Veterinary Surgeons be appointed a member of this Committee; also, that Mr. Clay be re-appointed on the Committee.

Various letters from the Farriers' Company had been read, and the Committee recommended that the Secretary seek a personal interview with the authorities of that Company, in order to explain the desire of the Council to meet the wishes of the Company, and that if the examination in the showyard is sufficient for their requirements, the Council will accept the offer of the Court of Assistants to confer the freedom of the Company on the first-prize winners in the competition, and will pay the necessary fees for the stamps.

The PRESIDENT read the following letter from Dr. Fleming, C.B., Principal Veterinary Surgeon to the Forces, which had just been received by him :—

"I am very sorry I cannot be present at the meeting of the Council this forenoon, as it was my intention to speak strongly, with your permission, in favour of continuing the practice of protective inoculation for Black Quarter. Such inoculation is in no respect whatever experimentation, and needs no licence to practise it. It is as certainly protective against Black Quarter as vaccination of man is against Small-pox, for which no licence is needed from the Home Secretary. As the prohibition to the application of this remedial measure will have serious results to veterinary science, no less than to agriculture, if the grounds of such prohibition be accepted as a principle upon which the Home Secretary may act, I would respectively urge that the Society maintain its right to resort to this inoculation as a medical and sanitary measure; and if no one else will do so, I will direct or even perform the operation, and assume the entire responsibility for such action, as I feel assured it would be amply justified anywhere and everywhere."

After some remarks from Lord Egerton of Tatton, who expressed his willingness to offer Dr. Fleming facilities for any treatment of the kind mentioned, the letter was remitted for consideration to the Veterinary Committee.

THE COLLEGE OF STATE MEDICINE.

ON June 13, at Burlington House, London, Dr. Fleming, C.B., Principal Veterinary Surgeon of the Army, delivered a lecture on "The More Important Diseases Common to Animals and Mankind." In the course of the lecture he said :—

"The relations of man to the lower animals are many-sided and diverse, but certainly those which pertain to pathological conditions are of the greatest moment to the student of disease, to the sanitarian, and to the legislator.

"In dealing with the more important diseases common to animals and mankind, it will be understood that I speak only of those maladies which are transmissible from one to the other—from animals to mankind, or from mankind to animals—those diseases which have been proved to be, or are assumed to be, due to the presence of a micro-organism or germ. There are other affections which are common to both, or rather have their affinities in each, but which cannot be transferred from one to the other.

"Although the actual number of diseases transferable from man to animals and animals to man is comparatively small, yet they occupy a relatively important position in human pathology; and this importance is enhanced by the fact that the number is being added to, because observation and experimental pathology are more rigorously and exactly applied in their investigation than hitherto.

"The science of comparative pathology, which deals especially with this subject, has two essential sources of information open to it—observation and experiment. Experimental pathology is the most fruitful source of precise knowledge in medicine, as it converts probability into certainty with regard to contagious diseases. True, its aid can rarely be invoked in investigating the phases and changes presenting in man from the introduction of an animal virus into his body; in fact, mankind cannot for moral and sentimental reasons be made a test agent, experimentally, except in one disease, which I shall allude to hereafter.

"Few though the diseases are which are common to man and animals, it is certain that man receives more than he gives; for while the number of human disorders which are transferable to animals is extremely limited, those of animals which can be communicated to him are comparatively numerous: the immunity animals enjoy in this respect is denied him. Thus the great majority of the more serious diseases to which the human race is liable cannot be transferred to animals: I may instance, Syphilis, Cholera, Typhoid Fever, Small-pox, Measles, and Scarlatina; while mankind has the aptitude to receive Anthrax, Rabies, Foot-and-mouth Disease, Glanders, Cow and Horse-pox, Diphtheria, and, in all probability, Tuberculosis—not to mention the reception of entozoa and epizoa, entophytes and epiphytes, which give rise to morbid conditions, often of a most serious nature, in our own species.

"Why the whole of the contagious diseases of animals cannot be conveyed to man, and all those of man to animals, we do not know; but it is probable that the non-transmissibility of affections which are acutely infectious and contagious in one species of creatures, and are not so with regard to other species, is related to the nature of the germs producing them, and the kind of pabulum upon which they thrive. The deadly Cattle Plague is confined to ruminants; while Anthrax, arising in these, can be implanted in a wide range of species, including man; Glanders, peculiar to solipeds, even varies in its infectiveness among these, and though it can be transferred to mankind, and some other species, yet cannot be conveyed to the ox. The Lung-plague of cattle cannot be transferred to other species, all attempts at its conveyance to these by inoculation having failed; yet so active is its virus in the bovine species, that a few drops of serosity from the affected lungs introduced beneath the skin of a cow, will cause death in a short time. Swine-plague, deadly in the porcine species, has a most limited range beyond it. Sheep-pox can, with great difficulty, be conveyed to goats, and cannot be carried further—while Horse and Cow-pox can be inoculated in several species, and especially in mankind. Rabies, arising in the canine species, knows scarcely any limit to its extension. And so on with other diseases belonging to this class; their diversity in respect to extension beyond the species to which they are special forming a curious and instructive study.

"I may remark here, and am justified in insisting upon the fact, which is

an important one to remember, that however widely a contagious disease may be extended among different species of creatures, it never loses its specific characters, though these may be more or less modified according to the species in which it is implanted; and when it is returned to its natural soil it manifests itself with all its original features, and proves its inalterableness and absolute identity, however much it may have been transformed or attenuated during its transitions from one species to another."

After dwelling on the great advantages experimental pathology had conferred upon medicine, speaking of it as the most fruitful source of precise knowledge in medicine, converting, as it does, probability into certainty with regard to contagious diseases, and lamenting the unfortunate restrictions placed upon its students in this country, he described Tuberculosis as the most serious of all the diseases common to mankind and animals. Enumerating its special features in every species liable to infection, the experiments which had led to the present state of our knowledge regarding it, the grave danger the public incurred through its prevalence in cattle and other creatures, and the urgent necessity for effective sanitary measures to check it, Glanders was alluded to as a malady which had been successfully controlled only since experimental pathology had demonstrated its real nature. Pointing out that it was known to the Romans, and that Solleysel and other French hippiatrists of the 16th, 17th, and 18th centuries recognised it as contagious, the lecturer remarked that its inoculability was demonstrated by the Danish veterinarian, Abilgaard in 1795, and Viborg in 1797; and at the commencement of this century its contagiousness among horses was entertained by many veterinarians. But, unfortunately, this knowledge was not utilised for the suppression of the disease, which was widely prevalent in this country and on the Continent; to such an extent that in Bavaria it was estimated that 4 per cent. of the horse population was destroyed by the disease. In one of the largest studs in Hungary it raged as an epizoöty from 1808 to 1816, and so virulently as to cause the death of nearly 20,000 horses. In 1812 alone it was estimated that as many as 12,000 horses were lost through it. The cause of the spread of the disease was doubtless due to the influence of the Broussain doctrine, which, in the first half of this century, did so much harm in regard to contagious diseases. Referring to the prevalence of the malady in this and other countries, and to its extinction among the horses of the British Army, he said the history of human Glanders is very curious.

In the 17th century Van Helmont imagined that Skin Glanders or Farcy might be a source of Syphilis in man—a notion entertained by Ricord so late as 1856. In 1783 Oisander observed what was probably a case of transmission of Glanders to man. In 1810 Waldinger, in 1812 Lorin, and in 1822 Veith, described accidents occurring to students and others from dissecting glandered horses, though they do not appear to have realised that the disease so produced had any relation to Glanders. In 1817, however, Sidow was of opinion that Glanders was transmissible to man, and asserted that to his own knowledge veterinary students very often had serious ulcers after dissecting glandered horses. But the first positive and undeniable observation of this transmission was made by Schilling, surgeon to a German cavalry regiment, who, in 1821, published a case of what he called "Gangrenous Erysipelas," due to an animal poison, occurring in an attendant at the Berlin Veterinary School, who had been employed in dressing the ulcerated nostrils of a glandered horse. The man died, and the *post-mortem* appearances were like those of a diseased horse. Then Weiss, another German surgeon, made a similar observation in the same year; but the director of the Berlin Veterinary School and some German veterinary surgeons averred they had never known of such transmission, though they admitted that sometimes

gangrene had followed dissection wounds. One veterinary surgeon was so confident the disease was not transmissible, that he offered to inoculate himself. In 1821, Muscroft reported in the *Edinburgh Medical and Surgical Journal* the case of a man who, in cutting up the carcase of a glandered horse to feed hounds, wounded himself in the hand. He became unwell after some days, showing symptoms like those of Farcy, became rapidly worse, and in about a week died of confirmed Glanders. In the same journal in 1823, mention is made of two similar cases occurring in London—one of them a veterinary surgeon—both accidentally inoculated from glandered horses, and both dying. In 1826, Travers published his celebrated work on "Constitutional Irritation," in which he gives his own observations and those of Coleman, of the Royal Veterinary College, on the transmission of Glanders from the horse to man, and from man to the ass—and here we have the first experimental demonstration of such transmission. A veterinary student wounded his finger while examining the head of a horse which had died of Glanders. The wound became an ulcer, and soon the absorbent vessels and connective tissue of the limbs were inflamed; abscesses formed, and death soon occurred. Abscesses were found in the lungs. Matter taken from these abscesses was inoculated into an ass by Coleman, and it soon died of Glanders. In another case, a veterinary surgeon in administering a bolus to a glandered horse was inoculated with the discharge from its nostrils, and attacked with Farcy, recovery from which was long and difficult. Travers also mentions another recovery of a coachman, who was attacked with Farcy and Glanders from contact with a glandered horse. An ass inoculated with matter from the ulcers in the nostrils died of Glanders.

In 1829, Brown published in the *London Medical Gazette* a very interesting "Fatal case of acute Glanders in the Human Subject"; and in 1833, Elliotson, in a paper published in the Medico-Chirurgical Transactions, entitled "On the Glanders of the Human Subject," gives four cases, with details of the autopsies, and describes the production of Glanders in an ass by inoculation with pus from one of the patients.

After this time numerous cases were published in England, and no doubt whatever was entertained as to Glanders being a communicable disease.

In France this knowledge made slow progress, for the facts accumulated elsewhere were scarcely known in that country. The doctrine of Broussais was the cause. Cases must have been numerous, and they are probably included among the putrid Fevers, malignant Gangrenes, adynamic Fevers, etc., which are so frequently mentioned at this time. Rayer had witnessed Glanders in horses, and at his hospital, "La Charité," one day in 1835 he discovered a groom suffering from the so-called Putrid Fever. His quick eye immediately detected a resemblance between it and the equine disorder, and the man's occupation confirmed the suspicion. He had been attending a diseased horse. It was a case of acute Glanders; all the symptoms were carefully noted, and when the man died the lesions were exactly registered: while with pus from the abscesses a horse was inoculated and Glanders produced.

Notwithstanding this demonstration the contagiousness of Glanders was stoutly denied; and almost endless, and certainly acrimonious discussions on the subject, took place at the Academy of Sciences and the Academy of Medicine, the strongest opponents of contagion being veterinary surgeons, who, from their opportunities of observing the disease, should have been foremost in upholding Rayer's opinion.

The lecture included Rabies, Anthrax, Foot-and-mouth Disease, the variolous diseases of animals—especially Cow and Horse-Pox, and reference was made to Diphtheria, Septicæmia, and, briefly, Scarlatina and Tetanus.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

At a meeting of the Board of Examiners held in London on and between April 4th and 18th, the following Students from the Royal Veterinary College passed their Oral and Practical Examinations and were admitted members of the profession:—

Mr. H. Spurgin	Freemantle, Southampton.
„ F. A. Simpkins	Narborough, near Leicester.
„ C. Rose	Highbury, N.
„ J. W. Wooding	Glandovey, Cardiganshire.
„ F. Aulton	Duffield, Derby.
„ C. K. Dobson	Holbeach, Lincolnshire.
„ W. Western	Sidcup, Kent.
„ A. E. Gostling	Swaffham, Kent.
„ C. Rea	Waterford, Ireland.
„ T. Hibbard	New Brompton, Kent.
„ F. W. Stanley	Not *yet* complied with rules.
„ J. P. Whigham	Hawkhurst, Kent.
„ J. T. Abell	Derby.
„ F. W. Anderton	Halifax, Yorkshire.
„ T. Dawson	Pontefract, Yorkshire.
„ F. P. Collings	Mutley, Plymouth.
„ F. C. Stratton	Southampton.
„ A. James	R. V. C., Camden Town.
„ R. W. Knowles	Wisbeach, Cambridge.
„ C. W. Crofts	Bedford.
„ W. Shipley	Great Yarmouth.
„ D. Fairbank	Willenhall, Staffordshire
„ J. T. Rees	Whitland, S. Wales.
„ T. F. Cade	Bristol.
„ W. R. Pointon	Not *yet* complied with rules
„ J. E. Cartwright	Wolverhampton.
„ W. Turtill	Wickham Market, Suffolk.
„ J. H. Harris	Monmouth.
„ W. H. Bush	Islington, N.
„ W. Perryman	Beaconsfield, Bucks.
„ W. H. Brooke	Handsworth, Birmingham.

The following students passed their Second Examination:—

Mr. J. C. Collings
„ H. J. Armstrong
* „ F. C. Gavin
„ H. W. Pitchford
* „ B. J. Rees
† „ T. B. Vanderplank
„ G. J. Harber
„ H. Millward
„ J. O. Cobbledick
„ T. Slipper
* „ J. W. Coe
* „ E. W. Oliver
„ J. C. Callow
† „ E. C. Martin
„ J. Gosling
* „ H. B. Chorlton
„ J. B. Dier.
„ A. H. Sugden.
Mr. W. B. Gridley.
„ F. E. Towler.
* „ J. Golledge.
„ T. Ludlow.
* „ E. D. Johnson.
* „ E. Porter-Smith.
† „ J. Millward.
„ B. L. Secker.
† „ A. Lesueur.
„ T. W. Peake.
„ A. J. Scath.
„ A. Bramall.
* „ H. S. Eglington.
„ J. Wilson.
„ F. W. Emery.
„ J. Wilson Barker.
† „ J. Beanland.

The following passed their First Examination :—

*Mr. T. N. Davis.
„ F. N. Potts.
„ H. B. Knight.
„ A. W. Reid.
„ L. E. Welfare.
„ R. W. Davis.
Mr. G. A. Wickett.
„ E. J. B. Fowler.
„ H. S. Smith.
*Capt. G. W. Farrell.
Mr. F. J. Carless.

ARTHUR W. HILL, *Secretary.*

Marked thus * passed Great Credit.
Marked thus † passed Very Great Credit.

At meetings of the Board of Examiners held in Edinburgh and Glasgow on and between May 14th and 24th, the following gentlemen passed their Final Examination, and were admitted Members of the Royal College of Veterinary Surgeons :—

Dick College.

Mr. M. Quinn	Ballymena, Co. Antrim.
„ F. R. Coleman	London.
„ J. Hughes	Belfast.
„ W. B. Cronyn	Dublin.
„ D. Jones	Denbigh.
„ A. Cleasby	Thirsk.
„ J. W. Hall	Hawick.
„ S. J. Hewitt	Newton-le-Willows, Lancashire.
„ J. O'Donoghue	Dublin.
„ J. Stewart	Edinburgh.
„ J. G. Clayton, G.C. ..	Wilmslow, Cheshire.
„ J. A. Gold, G.C.	Birmingham.
„ W. G. Barnes	Golspie.
„ D. C. Smith	Kirkconnel, Dumfries-shire.
„ M. Clarkson	Reith, Yorkshire.
„ W. Dagg	Nenagh, Tipperary.

New Veterinary College.

Mr. D. J. Jones	Cardigan.
„ F. Austerberry	Manchester.
„ F. L. Carter	Manchester.
„ W. J. Tatam	Bedford.
„ W. J. Wood	Pickering, Yorkshire.
„ J. Dunnett	Thurso.
„ J. F. Carson	Cahir.
„ T. Lillico	Wooler.
„ A. Shawcross	Cheadle, Cheshire.
„ J. D. Borthwick	Kirkliston, Edinburgh.
„ T. W. Grenfell	Calstock, Cornwall.
„ A. Duval, G.C.	Edinburgh.
„ G. Craik	South Shields.
„ J. Murray	Keith.
„ W. F. Egan	Ballinrobe, Mayo.
„ A. Bate	Wrexham.
„ S. Cameron	Barrow-in-Furness.

Glasgow Veterinary College.

Mr. M. Graham	Glasgow.
„ H. D. Young	Stewarton, Ayrshire.
„ W. D. Smith	Dundalk.
„ A. B. Baird	Rutherglen.
„ R. Hamilton	Lanark.
„ T. J. Campbell	Stranraer.
„ J. D. Miller	Argyleshire.
„ J. M. Stewart	Paisley.
„ J. Forbes	Bellshill.
„ D. Imrie	Strathbungo, Renfrewshire.
„ J. Shade	Glasgow.
„ A. Mackenzie	Govan.
„ W. B. Gardner	Ballymena, Co. Antrim.
„ W. McKerlie	Stranraer.
„ J. Ferguson	Alyth, Perthshire.
„ T. B. Hamilton	Salisbury.
„ J. McFarlane	Gartmore, Perthshire.
„ F. G. Warmington ..	Shrewley, Warwickshire.

The following passed their Second Examination :—

Dick Veterinary College.

Mr. T. S. Clark.
„ C. D. Watkins.
„ G. Henderson.
„ J. Thompson.
„ H. G. Rogers.
„ P. Connacher.
„ R. H. Stephenson.
„ A. Dowdall, V.G.C.
„ W. McQuatt.
„ J. Peddie, V.G.C.
„ R. S. Craig.
„ F. W. Barling.
„ J. Bell, V.G.C.
„ F. T. Finney, G.C.
„ G. Langran.

Mr. T. W. Rogers.
„ J. W. Hewson, G.C.
„ A. Richardson, G.C.
„ J. C. Rowland, G.C.
„ A. S. Wallace, V.G.C.
„ A. E. Mettam.
„ J. M. Christy, G.C.
„ J. G. Gilmour.
„ J. E. Miller.
„ W. H. Hawthorne.
„ W. Achroyd, V.G.C.
„ S. Stockman.
„ G. Montgomery.
„ C. Deathe.

New Veterinary College.

Mr. W. Westgate.
„ T. Eastwood.
„ E. Kellett, G.C.
„ E. Frankline.
„ W. Dotchin.
„ G. Stevenson.
„ T. M. Parker, G.C.
„ F. D. McLaren, G.C.
„ A. D. Minor, C.C.
„ O. T. Williams.
„ W. J. Bushnell.
„ W. Stothert, G.C.
„ J. W. Bate.
„ R. C. Hughes, G.C.
„ E. H. Curbishley, V.G.C.
„ J. W. Rider, G.C.

Mr. E. P. Edwards.
„ T. G. Duggle, G.C.
„ F. Hutchinson.
„ W. Kendall.
„ R. W. Donaldson.
„ F. Dales.
„ T. H. Dale.
„ D. McGregor.
„ C. Ward, G.C.
„ R. D. Davidson.
„ J. Robertson, G.C.
„ J. Barker, G.C.
„ F. Booth.
„ E. F. de Jong.
„ J. Clanchy.
„ T. Williams.

Glasgow Veterinary College.

Mr. J. M. Graham, G.C.
„ J. W. Peatt.
„ J. Gregg.
„ M. Wilson, G.C.
„ J. Watson.
„ J. McDougall.
Mr. D. Warnock, V.G.C.
„ W. E. Maxwell, G.C.
„ S. R. Thompson, G.C.
„ C. J. Dunn.
„ H. Ross.
„ J. N. Beevor.

The following passed their First Examination :—

Dick Veterinary College.

Mr. D. H. Wood.
„ R. S. Walley.
„ R. Smith.
„ J. Mitchell.
„ D. Stronoghan, V.G.C.
„ H. Kenny, G.C.
„ W. Williams.
„ J. R. Crone, V.G.C.
Mr. W. P. Weston.
„ R. G. Robertson.
„ G. F. Ferguson.
„ J. Higginson, G.C.
„ J. Park, G.C.
„ A. Patterson, G.C.
„ W. Hewison.
„ E. Bowman.

New Veterinary College.

Mr. E. Fern.
„ J. A. R. Towers.
„ J. H. Parker.
„ T. Hume.
Mr. R. Bell.
„ J. Cockburn.
„ W. S. Lamont.
„ E. Nelson.

Glasgow Veterinary College.

Mr. J. K. Bruce, G.C.
„ R. Weir.
„ W. Logan, G.C.
„ W. H. Davidson.
„ A. Renfrew.
„ T. A. Trotter.
„ W. Erskine.
„ W. S. McMurrick.
„ D. Clerk.
„ G. Waddell.
Mr. J. Bishop.
„ J. Thompson.
„ P. J. Austin.
„ C. A. Squair.
„ P. Connoly, G.C.
„ J. Kirk.
„ A. Hill.
„ W. Ledger.
„ P. Gillespie.

R. Rutherford, F.R.C.V.S.,
Secretary to Board of Examiners.

Army Veterinary Department.

The Annual Dinner of the Army Veterinary Department took place at Whitehall Rooms of the Hôtel Metropole, on June 15th. The following were present :—Dr. Fleming, C.B., Principal Veterinary Surgeon (Chairman); Inspecting Veterinary Surgeons C. Steel (retired), Dr. Evans, J. D. Lambert, W. B. Walters; Veterinary Surgeons, First Class, H. Thomson, F. Walker, F. Duck, G. A. A. Oliver, J. Kettle, J. Reilly, W. Pallin (retired), J. Hammond, W. H. Kemp, J. W. Evans, A. A. Jones, G. D. Whitfield, J. Barton, S. Longhurst, S. Gillespie, A. Bostock, M. Anderson, T. Flintoff, J. D. Edwards, F. Smith, D. C. Pallin; Veterinary Surgeons W. R. Hagger, R. Pringle, T. A. Killick, J. B. Savage, E. Day, C. Rutherford, F. J. Short.

At the levée held by the Prince of Wales at St. James's Palace, on June 8th, Veterinary Surgeon First Class Adrian Jones, 2nd Life Guards, was presented by General Viscount Templeton; and Veterinary Surgeon First Class J. A. Woods, by Lord Kilmarnock.

Obituary.

THE Army Veterinary Department has sustained another loss by the death of a most promising officer, Mr. H. A. Fullam, who, though only a few years in the service, had won most favourable opinions. The sad event occurred at Karachi, Sind, India, on May 1st, death being due to cerebral apoplexy supervening on Small-pox.

The following deaths have been officially reported :—John Litt, M.R.C.V.S., Bolton, and George Bollington, M.R.C.V.S., Oldham.

Referring to the death of Mr. Harpley, to which we alluded in our last issue, the *World* of June 6th says :—"The 'Blues' are in mourning for their late popular veterinary surgeon, Mr. Harpley, who died the other day at his residence in Bruton Street, beloved by all who knew him. During his service with the regiment he was a moving spirit in its social life, and among his brother officers there was no man who was held in higher esteem, or whose opinion was more readily taken when any difficult question had to be decided affecting the regiment or its *personnel*.

Jurisprudence.

THE VETERINARY SURGEONS ACT.

AT the Beccles County Court, on May 16th, William Ives sued Emma Shardalon for 16s. for medicine and attendance upon the defendant's cows at Norton Sabcourse. The Judge inquired if plaintiff was a member of the Veterinary College, or on the Register of Veterinary Surgeons? Plaintiff said he was not, but he was apprenticed to a veterinary surgeon, and had never done anything else all his life. His Honour said he could not recover, and directed plaintiff's attention to the fact that he was liable to a penalty of £20 every time he acted. Plaintiff said he did not know that, that there were hundreds acting in a similar way. He waited upon this lady when she could not get her own veterinary surgeon to the cows. Defendant: And this lady offered you a fair price. Judgment for defendant.

Notes and News.

A PROLIFIC EWE.—Mr. Geo. Bolam, Farndon, Alnwick, N.B., has a half-bred ewe which recently dropped five lambs. One of them died, but the others are doing well.

M. PASTEUR'S SYSTEM AND THE CATTLE PLAGUE.—The recent experimental inoculations against the Siberian Cattle-plague which have been carried out on a hundred Merino sheep by Dr. Gamalea, of the Bacteriological station at Odessa (the *Daily News'* correspondent says) have given the most hopeful results. Some time will of course be required to prove the absolute efficacy of the system. Dr. Gamalea assures me that he himself has now not the slightest doubt as to the general result. He estimates the cost of inoculating large flocks at approximately one penny per head. The importance of the success of this means of eradicating the Siberian Cattle-plague in Russia will perhaps be more readily understood when I state that during last year, in the single province of Kherson alone, the loss to proprietors by the ravages of this disease amounted to more than three millions of roubles. Dr. Gamalea and his colleagues being convinced that

the Cattle-plague arises from the presence of bacteria, the Pasteur system, applied under slightly altered conditions, will, they believe, eventually prove efficacious. Tentative experiments on cattle have already been made, but those now about to be undertaken on the basis of closely-made observations and general experience are expected to give more positive results. Glanders will be next experimented with. In the whole of Southern Russia the Siberian plague and the ordinary Cattle-plague have hitherto had a permanent habitat, and their yearly recurrence has impoverished and ruined thousands upon thousands of the peasant proprietors, to say nothing of the enormous losses of the large owners of sheep-runs and cattle-ranches.

TUBERCULOUS RATS.—Dr. Meunier mentions that, in a certain infirmary in France where it was the custom to throw the remains of poultices, which had been taken from tuberculous abscesses, into a corner of the garden, this spot proved a source of great attraction to the rats, which are very fond of linseed. These animals becoming very numerous, the students and medical officers had a grand rat hunt one day, and succeeded in killing a large number. They were somewhat astonished to notice that most of the rats had immense necks. On examination it was discovered that this was due to Tuberculosis of the glands. In addition to these glands other organs were in many cases found to be the seat of the disease, so that the rats had probably paid somewhat dearly for their indulgence in the luxury of eating cast-off poultices.

Correspondence.

THE DUAL OFFICE OF EXAMIMER AND COUNCILMAN.

SIR,—The above title stands at the head of a communication from Mr. Thomas Greaves, F.R.C.V.S., in the June number of the VETERINARY JOURNAL. As is his wont, Mr. Greaves poses therein as the champion of the Council, and while I make no charge of wilful misrepresentation against Mr. Greaves, I do assert that there is reason for sincere regret that, when he assumes the *rôle* of spokesman for the Council, he is not more particular—as is certainly not the case in the present instance—that his assertions are strictly in accordance with facts. I am quite satisfied that, as on former occasions when matters having reference to the profession, which, in the opinion of some members, call for reform, it has been perfectly useless to argue with Mr. Greaves in the hope of convincing him, so now he will continue to use his influence for the maintenance of things as they are in connection with this subject. Therefore I do not intend herein to answer Mr. Greaves personally; but, for the information of those who were not at the annual meeting in May, I propose to state the facts as they really were brought forward by Mr. Dollar and myself, as proposer and seconder of the motion put before the meeting in the following terms, viz., "That, in the opinion of the members of the profession here present, it is wrong in principle for a member of Council to act as an examiner."

Passing over Mr. Greaves' complimentary (?) remarks about "disaffected partisans," it is gratifying to read that "the objections raised against the system" may, under any conditions, even appear feasible. With most men such an admission would be received as the first gleam of hope that conviction might sooner or later dawn upon the mind; but I entertain no such hope of Mr. Greaves.

One of the principal objections to any member—or perhaps I ought to say Fellow—holding the double office of Councilman and examiner that was advanced was that the Council, having the power and authority to elect the

examiners, is practically the body to which the examiners are responsible, and that if at any time there should be a just cause of complaint against an examiner in reference to the fulfilment of his duties, it would devolve upon the Council to make the necessary correction. In which case the gentleman holding the dual office would, unless he for the time relinquished his responsibility at the Council Board, have to act as arbiter of his own case or that of a brother examiner. It was also stated that in the election of examiners a member of Council who aimed to occupy the dual office must, unless he retired for the time, vote for himself, which, if it takes place, is, to say the least, a very unseemly proceeding.

Mr. Greaves seems to have understood that this latter objection was the chief one advocated, and adds, as a rider of his own imagination, "irrespective of their fitness." This proviso was not mentioned either by Mr. Dollar or myself, and is therefore a departure from fact.

It certainly is not necessary for one to have "lost all faith in his fellowman" to object even to such an one as Dr. Fleming holding the dual office. Dr. Fleming's ability fits him for either position, as no one will admit more readily than I do. But I contend that, under the circumstances as they exist, it is neither prudent nor seemly that Dr. Fleming, or any one else, should be asked to undertake the double responsibility. Assuming that when the election of examiners takes place the member of Council proposed for the dual office retires for the time being, and does not take part by voice or vote in the matter, the Council is deprived of his influence on the occasion, and the question at once arises, Does not this involve a neglect of responsibility which he owes to those who elected him as a member of Council? Personally I consider it does, though, under the circumstances, unavoidable, which I consider evidence of the necessity for an entire reform. Mr. Greaves quotes Dr. Fleming's election to the Council as an instance wherein the profession showed its approval of the dual appointment, because he was recently elected as a member of Council by nearly one hundred votes more on the present occasion than were recorded at his previous election. This sort of argument is entirely misleading, as the votes were given for Dr. Fleming as a member of Council only, and had no bearing at all upon the subject of the dual office, which had not at that time been mooted in public. If Mr. Greaves cannot find any better method of supporting his views than by adopting such tactics as these, the value of his opinions may be very safely left to the profession to appraise.

No one, I presume, would question the statement that "those members of our Council who are also examiners are some of the best, if not the very best, members." It is patent to the shallowest mind that such may be the case, while at the same time a combination of offices may be, and no doubt is, extremely undesirable. It is the principle, not the capacity, of individuals that was questioned.

As Mr. Greaves, in his complacent self-satisfaction, claims that the present custom of electing examiners by the vote of the Council is perfection itself, and, after an experience of "between twenty and thirty years' actual work inside the Council," seems to be of the opinion that no one outside that body is competent even to form an opinion respecting such a subject as the election of the examiners, it may be desirable, if not interesting to Mr. Greaves, to state that there is a goodly number in the profession very dissatisfied at the steps taken by the Council at the recent election of examiners, inasmuch as the names of two gentlemen are missing from the present Examining Board who previously occupied the position with dignity to themselves and with a due appreciation of the requirements of their office. I refer to Mr. Archibald Robinson and Mr. W. A. Taylor, both of whom were eminently fitted for the responsible duties; and assuming that either or both did not give satisfaction

to every candidate who presented himself for examination, it is more than probable that this goes to prove how conscientiously they sought to fulfil their duties. If it were necessary to furnish an additional reason to what has already been advanced for dissatisfaction with the present mode of electing examiners, this action of the Council provides a very potent one, and unless these gentlemen voluntarily declined to be re-nominated, it is considered by many that an unjustifiable indignity has been heaped upon them, especially as regards Mr. Robinson, after what took place in Edinburgh.

I was always under the impression that, when gentleman are elected as members of Council, they presumably accept the office as representatives of the profession, whose duty it is to legislate for the profession as a body and to carry out the views of the majority ; and I venture to think that if Mr. Greaves and those of the Council who agree with him showed themselves a little more ready to take into their consideration matters of reform that any members think are of sufficient importance to suggest, even though, as in this instance, supported by a minority, confidence would be more fully established, and a far better feeling exist towards the Council. Fortunately for myself I am able to approach this subject in an unquestionable spirit of chivalry, having for its object the well-being of the profession, and that only, so far as the light that is in me permits. A charge of jealousy and rancour cannot be levelled at one who is neither at present eligible nor ever likely to be for either membership on the Council or a seat at the Examining Board. I was therefore all the more pleased to be in a position, with an unbiassed mind, to support Mr. Dollar's well-timed resolution, and trust that the profession will, after thoughtful consideration, see it to be in its own interest to ultimately demand its adoption, and, as a sequence, to ensure a change in the system of electing the Examining Board. J. Sutcliffe Hurndall, M.R.C.V.S.

2, Gloucester Terrace, Blackheath, S.E., June, 1888.

"THE JOURNAL OF COMPARATIVE PATHOLOGY AND THERAPEUTICS" AND MR. POTTIE.

Dear Sir,—A friend of mine the other day put a journal with the above title into my hands, at the same time calling my attention to an editorial paragraph, and to some remarks in the same journal by Mr. Pottie, "On the Propagation of Influenza from Stallions to Mares." The editorial paragraph is headed, "Can apparently Healthy Stallions communicate Influenza to Mares. ?" The editor says "Mr. Pottie was, we believe, the first to call attention to the fact that stallions can and do communicate Influenza to mares served by them" Mr. Pottie commences his remarks by saying: "About four years ago, I brought this subject before the West of Scotland Veterinary Medical Association," etc. When I read these statements, I wondered whether the editor and Mr. Pottie had been dreaming, or whether I was myself dreaming. I think the majority of your subscribers will be able to satisfy themselves as to who was the first to direct attention to this subject in this country, by reference to pages 356 and 453 of the Veterinary Journal of 1885. I would particularly desire to draw the attention of such of your readers as are interested in the subject to page 456 of the same journal, where the following sentence will be found, commencing in the sixth line from the top of the page: "Several veterinary surgeons, I am told, examined the horse, and certified that he was not only in perfect health, but incapable of producing the disease." I need not tell your readers that but for the terms of Mr. Pottie's and the editor's remarks, I should not for one moment ever have thought of letting the profession know that the leader of the stallion informed me that Mr. Pottie was one of these veterinary surgeons. Although I have looked care-

fully through the transactions of the West of Scotland Veterinary Medical Association, I have been unable to find a remark of Mr. Pottie on the subject, and I may add that I have been a pretty regular attendant at the meetings of the Association, and certainly do not recollect Mr. Pottie ever introducing the subject. Having, however, indicated where a reference to the journal can easily decide the matter, I will not take up more of your space on the subject.

Thanking you in anticipation for the insertion of this letter.

Greenock, *June 15th.* ARCHIBALD ROBINSON.

CRUELTY TO ANIMALS.

SIR,—I send you the enclosed as an illustration of the proceedings of the R.S.P.C.A.

The following are the facts:—On April 28th my client, Mr. Allen, requested my attendance to a colt. On arriving on the Commons, I find two unbroken yearling colts, one of them going lame, apparently from a kick in the inside of near hind limb, above the hock. Not being able to get very near to the colts, I advised them both being driven to an enclosed field not half a mile distant; this was accomplished with very little trouble, the lame colt following the other. On further examining the injured colt I found an abrasion, not larger than a shilling, on the lower third of tibia, but failed to detect any crepitation whatever. I told my client the nature of the injury, adding that there was a good chance of its recovery, and advised the limb being bound round in a pitch plaster; this I did before leaving. The colt was then left in the two acre enclosure, as, being so young and unbroken, I did not consider it advisable to house it, which would have necessitated another half-mile drive.

I visited the colt again on May 4th, found the colt doing well, feeding, and able to put some weight on the injured limb; little or no sweating. Unfortunately the next day, May 5th, the colt gets into an adjoining field and falls into a gully on its back, and through struggling causes separation of bone to take place at point of injury. My client, on hearing of the accident, causes the animal to be immediately slaughtered (for which humane act he receives a second summons).

A policeman sees the carcase at the kennels a few days after, and sends word to the Society's inspector, who arrives and makes inquiries. Not being able to gain much information from Mr. Allen, he comes to me, saying he is making an investigation into the case; would I give him any information?

Knowing there was nothing to hide, I told him the whole circumstances, expressing an opinion that no cruelty whatever had been practised, and adding that my client was acting under my instructions in removing the colt from the Commons on April 28th. This I repeated on two occasions, and at neither interview did the inspector allege any cruelty on my part. Nevertheless, on leaving my house the second time, he immediately applied for a summons against me, the result of which you will see from the newspaper cutting I enclose.

The summonses were not issued until May 28th. The prosecution alleged that the colt's leg was fractured, and the bones in the same state on *April 28th* as seen by the inspector on or about *May 9th*, after the carcase had been dragged out of the gully by two horses, and carted a distance of four miles; and he called two youths, about seventeen and ten years of age, who never were within twenty yards of the animal. The other witnesses were a few miners, who had seen the colt walking about the field with its leg bound up, the man who fetched the carcase, and the kennel man who skinned it. The prosecution also exhibited the bones and portion of the skin in court.

Although the cases were dismissed, the costs which my client and self will

have to pay amounts to nearly five pounds. Apologising for trespassing on your valuable space,

WILLIAM RIDGMAN, M.R.C.V.S.

Liskeard, Cornwall, June 12th.

ANIMAL DISEASES IN THE UNITED STATES.

DEAR SIR,—Lower California, *on the coast*, has been afflicted with a low peculiar form of Fever among the horses. I am inclined to think that it is of the same character as the malaria which is so prevalent in that place amongst the human race. The symptoms are ordinary indications of Fever—*well-marked red spots on the mucous membrane of the eyes.* If the suffering animal is taken off work, and simple measures, such as cool loose box, green food, etc., are allowed, the tendency is almost always towards recovery. But occasionally the mucous membrane is noticed to undergo a most peculiar change, becoming in appearance first very red, then purple, with a tendency for the spots to run one into the other. Perhaps I ought not to have said that "Lower California" was affected, as I only saw this disease in San Diego, and had no opportunity to make further enquiries, as to its prevalence. This city has grown so fast in population, that the sewage and general sanitary conditions are not adequate to the sudden growth; malaria arises from the outskirts, near the bay; the city is built on a level with the sea, and maybe all these matters help to bring about the general state of malaria amongst men and cattle. At any rate, I have never seen any similar cases previous to these, and I have seen and treated hundreds of them during my residence in that town.

Ultimately I became affected with malaria, which caused congestion of the liver, and I became as yellow as California gold. I intended at the outset of the disease to notice if these "spots" on the mucous membrane appeared, but became so depressed and languid that it altogether escaped my memory. I took big doses of mercury and got the liver at work again, followed it up with plenty of quinine, and am now OK again, as the Americans express themselves. There is quite a lot of quackery in this country, both in medical and veterinary professors. This arises in a great measure from the tendency *on this side* of the Continent to "give every man a shew." This "shew" is frequently at the expense of horses' lives and pecuniary loss. In Canada they are more anxious that a man should *not* give deadly doses of medicine to animals by way of experiment. In a word, they appreciate *previous* practical training, and certificates to that effect. I am not mincing matters, but am stating plain truths, and I am sure that many other men will corroborate what I state. I have in my possession a prescription written by a practitioner of veterinary medicine—who asserts very strongly and denies most indignantly—containing ten drops of croton oil, eight drams of aloes, and half a gallon of linseed oil, and one ounce of laudanum, this mixture to be given to a horse suffering from Pneumonia. The "shew" that is given this man has a great tendency to lessen the number of the equine race. Personally, I can testify that this man has caused many a noble animal to bite the dust, and make food for the fishes of the Pacific Ocean. All dead animals are taken away in a lighter or barge, free of expense, opened so that the water may get in and cause the carcase to sink to the bottom of the peaceful ocean.

Chicago, as you will remember, has a population of eight hundred thousand, and is about fifty years of age. My first move was to make for the Veterinary School in State Street. It is a compact building, with large dissecting rooms above, infirmary, offices, pharmacy, etc., below, the professors having large private practices, from which the students are allowed to derive benefit. To-day I arrived in New York, and this afternoon made a pleasant visit to the "American Veterinary College," presided over by the well-

known Dr. Liautard, to whom I am indebted for treating me in the most courteous manner. The museum is a credit to that institution, and during the year 1887 there were two thousand eight hundred and twenty-seven diseased horses treated. This shews that attention is paid to imparting real information; but at the same time, while I will admit that the average American aspirant may be quicker in grasping mental matter than his English cousin, yet I hardly think that they can pack away—*permanently*—in so short a time as the curriculum demands, such an amount of veterinary information as shall entitle them to be called *properly* qualified veterinary surgeons. I notice, in the catalogue of the "American Veterinary College" that the official position of Meat Inspector is to be obtained only by graduates of veterinary medicine. This is good; and I maintain that there are few things which demonstrate the importance of the veterinary profession more than this matter, and such things that tend to *prevent* disease, both in man and beast. If I were a prophet I would prophesy that the schools of the future will tend more to the *prevention* than the cure of disease.

New York, *May 11th.* ROBERT J. DAWSON, V.S.

CORRIGENDA.

P. 386, 4th paragraph of article on Pilocarpine, read "It was this circumstance which induced me to combine, with such good results, Pilocarpine with Eserine."

SOCIETIES.

THE next meeting of the Royal Counties Veterinary Association will be held at Henley-on-Thames, on July 27th.

Several communications are held over until next month, in consequence of pressure on our space.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from F. Smith, A.V.D., Aldershot; R. J Dawson, New York; K. Lees, A.V.D., Newbridge; F. W. Somers, Leeds; R. W. Burke, A.V.D., Jubbulpore; A. W. Hill, London; R. Rutherford, Edinburgh; G. R. Dudgeon, Sunderland; W. Ridgman, Cornwall; J. A. Meredith, A.V.D., India; J. S. Hurndall, Blackheath; W. Caudwell, Worksop; G. Howe, Buxton; J. B. Savage, A.V.D., Aldershot; W. S. Adams, A.V.D., Hosur, India; J. Malcolm, Birmingham; T. Marriott, A.V.D., Sialkote, India; F. C. Mahon, Darlington; M. Rossignol, Melun, France; G. Mayor, Kirkham; Professor McCall, Glasgow; H. Kidd, Hungerford; S. Villar, London.

BOOKS AND PAMPHLETS: *J. Woodroffe Hill*, The Dog, its Management and Diseases; *J. A. McBride*, Anatomical Outlines of the Horse; *L. Franck and Ph. Goring*, Handbuch der Tierärztlichen Gebürtshülfe; *F. Friedberger and E. Fröhner*, Lehrbuch der Speciellen Pathologie und Therapie der Hausthiere; Bulletin des Séances de la Société Nationale d'Agriculture de France.

JOURNALS, ETC.: *Journal of the Agricultural Society of Victoria; Bell's Weekly Messenger; Giornale di Veterinaria Militare; Recueil de Médecine Vétérinaire; American Veterinary Review; Revue Vétérinaire; Hufschmied; Thierarzt; Wochenschrift für Thierheilkunde und Viehzucht; Echo Vétérinaire; Annales de Médecine Vétérinaire; Mark Lane Express; Live Stock Journal; Edinburgh Medical Journal; London Medical Record; American Live Stock Journal; Journal de Médecine Vétérinaire et Zootechnie; Lancet; British Medical Journal.*

NEWSPAPERS: *Glasgow Herald; Yorkshire Post; Devon and Exeter Daily Gazette; L'Avenir de Seine-et-Marne; Boston (U.S.A.) Herald; Boston (U.S.A.) Gazette.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

AUGUST, 1888.

ON CERTAIN INTESTINAL SYMPTOMS AND FUNCTIONAL DISORDERS (HORSE).*

BY W. A. TAYLOR, F.R.C.V.S., MANCHESTER.

WITHOUT begging the question, I think I may fairly claim that the papers which evoke the best and most profitable discussions at our quarterly gatherings, are those which treat in a concise manner on a subject of vital importance to the general and animal-owning public, or possess matter of prominent interest to us as scientific and practical men. To my mind, brevity of topic upon which discussion is to follow will continue to be appreciated more highly than long and exhaustive theses, until societies or the writers of papers decide upon having them printed and distributed to the members some little time prior to meeting for discussion. Of course, this assertion is made on the assumption—a justifiable one, you will admit—that one of the chief objects of veterinary medical societies is the meeting together of members for the ventilation of ideas, the interchange, of opinions, and the confirmation or negation of theories and facts. In giving expression to these views, I am aware that I lay myself open to the charge of infidelity to the cause I advocate, insomuch as my promulgation is one of precept rather than example.

Without desiring to be egotistical, let me here explain that I am now performing a duty which I promised to do at the next September meeting. Owing to unforeseen causes, the adjourned discussion on Mr. Hopkin's paper on "Roaring" has had to be postponed until September; hence, consequently, at the urgent request of our worthy president, I consented to introduce a subject for discussion at this meeting. Unfortunately, my leisure time has been so limited that I feel constrained to ask your indulgence in

* Read before the Lancashire Veterinary Medical Association, 13th June, 1888.

the errors of commission and omission that may creep into the following observations.

Constipation.

Ætiology.—The immediate causes may be summed up as: (1) Mechanical obstruction in some part of the intestinal tube; (2) Deficient peristaltic action of the intestinal muscular coat, probably due to impaired nervous excitability; (3) Deficiency in amount of fluids from defective secretion, or in some instances their excessive absorption. The first class of cases I may perhaps allude to hereafter. The other two may be associated with organic diseases, but frequently result from functional disturbance brought about by injudicious diet and want of sufficient exercise. It cannot be doubted that there are some horses predisposed to constipation, particularly those of a slow, lethargic temperament, and it is in this class of animal, subjected for a lengthy period to a diet consisting largely of dry hay of bad quality, and containing a great amount of ligneous matter, that we find some of the most obstinate cases of impaction of the colon.

Another not infrequent cause of constipation is a restricted supply of water or other fluids.

Treatment.—The treatment of constipation will depend upon the cause. If from dietetic errors, a change in food will be necessary. If from debility as a sequel to other organic disease, mineral and vegetable tonics, associated with nux vomica, will have the desired effect. If from paralysis of the intestinal muscular coat, greater care will be needed in treatment, and in the continued absence of pain plenty of time must be allowed for the intestine to recover tone, which will be best brought about by the administration of nervine tonics, rather than by large doses of strong cathartics. In these cases I have found efficacy from the exhibition of extract belladonna and nux vomica pulv. two or three times a day, along with walking exercise and a sloppy diet. Frequent enemata should also be employed.

Constipation in newly-born foals is a troublesome and occasionally dangerous condition. It is due to accumulation of the meconium in intra-uterine life, and inability to void it. In most cases enemata of warm water, soap, and a little castor oil are sufficient to relieve the loaded state of the rectum. In obstinate cases, accompanied by colicky pains and tenesmus, it may be found necessary to administer to the patient a dose of ol. ricini, in conjunction with tr. opii or chlorodyne, and when the retained meconium is very hard it must be removed by means of the finger. Some authorities state that this ought to be done prior to employing an enema. On the contrary, I have found an enema administered first aids the practitioner in scooping out the rectal

contents. In all cases of retention of the primary contents of the intestine, it is absolutely necessary that the dam's condition should be inquired into and a change in diet instituted. If found to have consisted largely of corn and hay, a liberal allowance of green food or a judicious quantity of roots may be given. The corn should be decreased, if not entirely prohibited, and the mare should be prevailed upon to drink considerable quantities of well-boiled oat-meal gruel. If it be found desirable to resort to therapeutic agents, magnes. sulph. in two to three-ounce doses should be given to the dam, dissolved in warm water and added to a sloppy bran mash. This may be repeated as often as found necessary.

Enteralgia—Intestinal Colic.

Ætiology.—Veterinarians usually speak of Colic as spasmodic and flatulent: both kinds are attended with irregular spasmodic contractions of the muscular coat. The chief causes are:—(1) Direct irritation of the bowels by improper or undigested food; cold water to drink when overheated; irritant or poisonous substances; retained fæces and foreign bodies or worms. (2) Organic diseases of the intestines; and the different forms of intestinal obstruction. (3) Reflex irritation, as from tumours or abscesses. (4) Morbid conditions of the blood. (5) Sometimes from exposure to cold, either generally or locally.

Symptoms.—The symptoms of intestinal Colic are usually quite characteristic and so familiar to us all that a detailed repetition of them here is unnecessary.

Treatment.—The first thing to be attended to is to find out, if possible, the cause of an attack, both by inquiry of the attendant and by a careful examination of the patient; having done this, remedies may be selected accordingly. The most controversial points in the treatment of spasmodic and flatulent Colic and Colic associated with impaction of the colon are the exhibition of purgatives, especially aloes, the employment of physostigmine and puncture of the colon.

I propose to review briefly the therapeutic agents I have found of greatest value in the treatment of the aforementioned varieties of Colic.

Aconite.—Fleming's tincture in doses of mns. vi., repeated every hour until pain is relieved, I have found very serviceable in simple spasmodic Colic, if given at the outset of an attack. It should be administered as a draught in from four to six ounces of cold water, and in the case of a horse known to be of unsound wind it is safer to give it in bolus. Where flatulence is present, combined with two to four drachms of ammon. carb. its efficacy appears to be enhanced. In the later stages aconite is of less value.

Belladonna and Opium.—These two agents are most valuable in the treatment of prolonged cases of spasm and impaction of the colon, given together, either in the form of tr. opii and belladon. ext. or their alkaloids, morphia and atropia, administered subcutaneously and frequently repeated.

Chloral Hydrate, in doses of from one to two or even three ounces, has in my hands proved successful in some cases of spasmodic Colic, but I doubt if it is a remedy which should be frequently repeated, or, if repeated, smaller doses ought to be given.

Aloes (Barbadoes).—From a perusal of the discussion at the meeting of the National Veterinary Association held last year on Mr. Fred Smith's able paper on "Some fatal diseases of the digestive canal of the Horse"—a paper, by the way, well worth studying—I gather that of sixteen members who took part therein ten spoke strongly in favour of purgatives—presumably aloes—in the treatment of impaction of the large bowel, two spoke in a somewhat qualified manner, and four made no allusion to the treatment of this form of intestinal obstruction. Not long ago the aloetic treatment of Colic and impaction had no stauncher supporter than myself, and if an ordinary antispasmodic dose failed to give relief I immediately had recourse to aloes. Of late I have employed this drug less and less, and if my success continue I feel I shall be justified in discarding it altogether as a therapeutical agent in these cases. A full dose of aloes in any case, should its purgative action ensue, necessarily entails a cessation of work for three or more days, and in instances where very large doses had been given I have seen effects which have nearly caused death from super-purgation. On the whole, therefore, I agree with Mr. T. W. Cave in his treatment of impaction of the colon, as described in a communication to the VETERINARY JOURNAL of April last. The primary object in the treatment of intestinal Colic is the relief of pain and relaxation of spasm, and if impaction be present I believe it can be got rid of by the frequent use of copious enemata, walking exercise, and a proper diet.

In doubtful cases of volvulus, intussusception, ruptured bowel or stomach, I look upon the administration of aloes as positively harmful.

Ol. Terebinthinæ.—In cases of flatulent Colic, or so-called grass Colic, in doses of two ounces or more, combined with ol. lini, it is often of great service, and through its antiseptic properties prevents further fermentation of the contents of bowel or stomach.

Physostigmine I have used in Colic impaction, but not sufficiently often to enable me to give an opinion as to its value, and I am afraid, after reading the communication on this drug by Messrs. Smith and Rutherford, in the April number of the VETERINARY

JOURNAL, in doses not large enough to induce the desired action. Others there are who have given this drug an extended trial, but have not met with that success achieved by the authors of the communication referred to; and as on their own showing its action is violent, and particularly so when combined with pilocarpine, its use should be resorted to with care and discrimination by the veterinary practitioner.

Puncture of the colon with the improved trocar and cannula in cases of acute tympany ought always to be performed, for if permanent relief be not obtained, no ulterior consequences of importance are likely to ensue from the operation itself. To be successful, the puncture should be made at an early stage of distention, and repeated if the tympany return.

Too much cannot possibly be said of the great value of copious and frequent enemata, the application of moist and dry heat to the abdominal walls and lumbar region, and the employment of friction and sinapisms.

From a fairly extensive experience of enteric diseases and the recourse to *post-mortem* examinations on all available occasions, I am convinced that cases of true Enteritis, *i.e.*, uncomplicated inflammation of the muscular submucous and mucous coats of the intestines, except as due to irritant poisons, are extremely rare in the horse; that so-called Colonitis, or Apoplexy of the colon, seldom, if ever, occurs; and that the morbid condition mistaken for this disease is on careful *post-mortem* examination found to be due to the double colon having turned on its short axis, near to its collateral attachment to the cæcum, and thus become strangulated and gangrenous.

In concluding these brief and somewhat disconnected observations, allow me to point out a danger into which many of us unwittingly at times fall; it is the mere routine treatment of particular diseases, or the too implicit reliance on the teaching and experience of others. These mistakes should be avoided, and each individual case ought to be considered on its own merits; for even the same disease may require very different treatment under different circumstances, and therefore the practitioner should be able to bring his own knowledge and common-sense to bear upon the matter, and to use his discretion in varying the measures employed. Before commencing treatment, an endeavour should always be made to realize distinctly what it is intended to accomplish by its aid, and what indications are afforded as to the measures which require to be adopted. In no class of cases are these admonitory comments more applicable than in functional derangements and diseases of the alimentary tract.

TUBERCULOSIS OF THE FOURTH CERVICAL VERTEBRA, CAUSING PARALYSIS.

BY W. CAUDWELL, F.R.C.V.S., WORKSOP, NOTTS.

On the 5th June I was required to examine a cow belonging to Mr. Sudbury of this town. She had been purchased by him about a month before, and was an excellent milker and in good condition. Upon turning her out of the shed into the field adjoining, I found that she was lame of the left fore limb, there was an inability to extend it freely, and a swelling of the knee. I was therefore at first disposed to attribute the lameness to rheumatism, but on further examination I found that she could not depress her head to graze, but carried it stiffly, and any attempt to elevate her head or turn it to either side seemed to cause pain. A careful manipulation of the neck failed to discover anything to account for the rigidity, although I felt pretty certain that there was some injury or disease of the basement structure, or of the spinal cord. Her pulse, temperature, and respiration were normal, and continued so, and she could feed well out of the crib.

Treatment.—An aperient drench was first prescribed, and on turning her head to the right side to administer it, she suddenly fell, but soon got up again. This, as will presently be seen, must have been due to pressure on the cervical portion of the spinal cord. After the bowels had responded to the aperient, nervine tonics were exhibited twice a day, and I applied a strong blister to both sides of the neck.

Partial motor paralysis of both fore limbs gradually progressed, the legs were abducted, and when she was made to move, knuckling over at the fetlocks took place, and there was fear of her falling, so on the fifteenth of May she was placed in slings, and kept up during the day and let down to rest every night.

My prognosis was very unfavourable, but as the animal fed and ruminated well, gave a large quantity of milk, and did not emaciate to an appreciable extent, I induced the owner to keep her a little while longer.

On May 24th the cow was slaughtered, she having become quite unable to rise.

Post-mortem Examination.—On examining the lungs a few tubercles were discovered, and the bronchial lymphatic glands also were in a tubercular condition. With these exceptions the organs of the thorax and abdomen were perfectly normal. On examining the neck, after dividing it, I found a circumscribed yellow patch, which proved to be a tubercular condition of the superior portion of the fourth cervical vertebra. The increasing tubercular deposit had produced a marked diminution in size of the spinal canal at this point, and consequent pressure on the spinal cord.

GLOSSINA MORSITANS OR TSETSE FLY.

BY KAY LEES, F.R.C.V.S., ARMY VETERINARY DEPARTMENT.

On the fifth of December, 1881, I received orders to proceed, as soon as possible, to the Naga Hills, where disease had broken out amongst the transport animals.

The Naga Hills are situated on the north-east of Assam, bounded on the south by the North of Assam, on the north by the Himalaya Mountains and Thibet, on the east by Upper Burmah and China, and on the west by India. Kohima, which is the chief station on the Naga Hills, forms the furthermost post on the north-east frontier of India.

As I was at the time stationed in the Punjaub, I had to proceed by train to Calcutta, and thence by inland river steamer up the Brahmapootra, travelling by this means ten days, and halting during the night at various ghauts, until I reached T——, a short distance south of Debrighur, in Assam, where I disembarked. I then proceeded to Golaghat, which is about twenty-five miles inland. This station forms the headquarters of the Commissariat and Transport Department for Assam and the Naga Hills. After staying there a short time I left for Nichuguard, the head transport office on the line of communication between Golaghat and Kohima. The route lay through a dense jungle, and was seven days' marching distance from Golaghat.

The road consisted of a broad tract, fairly well made, but was in a wretched condition, owing to so much traffic on it and the injury produced by heavy rains; and besides, there seemed to be little or no artificial or natural drainage, which all contributed to the road being in this condition. The tract was winding and hilly, with severe gradients at several places, and in consequence at some parts it was almost impossible to proceed. The pack elephants, even, had the utmost difficulty to cross some places, which were absolutely dangerous, owing to the fact of the bed of the streams consisting of clay, and in other parts of marsh or bog. At some of the low-lying parts of the road boughs had to be placed transversely and very close together, so that animals could travel with a firm footing and to prevent them sinking. If this method had not been adopted, it would have been an utter impossibility to get the elephants to proceed, as their instinct is so acute and suspicion so great that, when approaching any doubtful place where the footing is at all insecure, nothing on earth will persuade them to go on. It is most interesting to observe with what caution they explore with their trunk any portion of ground they have the slightest doubt about.

On the way from Golaghat to Nichuguard I found every

description of game in abundance, affording most excellent shooting. The jungle was so dense and enclosed at some parts, that, combined with the gases given off from decaying vegetable matter, it interfered with free respiration.

The climate was hot and moist, such as is suitable for the growth of tea. The rains continue from the fifteenth of March to the middle of June, with occasional heavy storms during these months—so much so as to cause great inundations, covering large tracts in the forest with swamps, and doing great damage to the roads.

The camps consisted of a clearing in the jungle, the felled trees being utilised for the construction of huts, which were built upon piles, and one end of which was well sunk into the ground, on which huts were erected at an elevation of about sixteen feet, thus affording some protection from malaria, etc. Some of these huts I found almost uninhabitable, and infested with every conceivable description of vermin.

I was fortunate in taking some provisions with me from Calcutta, such as Kopp's soup, tinned meats, flour, etc., as I could only procure rice and weeviled biscuits from the bazaars. The road from Nichuguard to Kohima is also extremely hilly, being over the Samaguting Hill, and consequently the most difficult and trying for baggage animals. Owing to the steep gradients, saddle-galls were numerous. The climate at Kohima is fairly healthy. The baggage animals consisted of elephants, ponies, and mules bullocks being used only for a short distance out of Golaghat, where the roads were good and fairly level. The baggage animals were used to convey rations, etc., to the native troops, chiefly the Assam regiments which were stationed at Kohima, but few men being on the line of communication. This duty was a very heavy tax upon the Commissariat and Transport Department, in particular during the Naga Expedition. I met the transport officer at Nichuguard, which was the head transport office on the line of communication, and he informed me of the heavy mortality amongst the ponies and mules which had occurred from year to year, the last season being most severe.

The disease appears to have been most fatal amongst the mules and ponies between March and June. There was no proof of what the actual disease was, as all the animals at work the previous season were dead. I was, however, inclined to believe that it was in a great measure attributable to overwork, travelling on bad roads in an unhealthy climate, feeding on indifferent and innutritious food ; (the distance these animals had to march, with a load of 250lbs., was seven miles over the Samaguting Hill, and to perform the same distance unloaded on their return ;) to a want of care, there

being only one syce (native groom) for every three ponies and one grass-cutter to every six ponies or mules, combined with the fact that at least twenty-five per cent. of the establishment during the rainy season were down with fever, dysentery, etc. I also gleaned that there was a great difficulty in obtaining green fodder after the month of March, and this difficulty must have been obviously increased by a reduction of establishment through disease. Many deaths amongst the animals were undoubtedly due to falls from the roads, which are extremely narrow at some parts, down the hill sides.

Saddle-galls no doubt accounted for many deaths. The saddles become loose and rotten with the rains, and slip on to the shoulders or loins while the animals are travelling up and down the uneven roads; and from what I could learn, if a wound or abrasion of the epidermis of any kind occurred after the fifteenth of March it was almost impossible to cure it, owing to the part becoming fly-blown and afterwards filled with maggots, or ulceration setting in of a malignant nature. The main mortality, however, was brought about by the attacks of the *tsetse fly*.

As this fly does not appear to have been previously observed in India, I especially wish to bring it to notice, and will endeavour to give a brief description of it.

This insect is about the size of a common house-fly, but of a dark brown colour. The after part of the body has always three, and very often four yellow bars across it; *these marks or bars are very characteristic*. The proboscis is divided into three portions, the middle one being the longest, and projects in a straight line from the head. When on the wing, the fly gives a very peculiar buzz, which would cause most people instinctively to evade it. It is remarkably alert.

I had the opportunity of seeing this insect several times in the jungle a few marches from Nichuguard, and when I was informed, on arrival, that nearly all the ponies and mules had died of debility or a gradual wasting away of the body, I naturally associated it with the disease. Symptoms of the disease were: A gradual but persistent wasting of the animals affected; in fact, they became so emaciated that one might be readily led to suppose that they were dying from starvation. They appear to have been bitten by an insect, as on one or more places of the body there is itchiness, which is followed by the formation of an ulcerating sore of a malignant character. But one peculiarity of the ulcer is, that it has but little tendency to spread or to heal. The ulcers are about one inch in diameter, and occur on the fetlocks, knees, shoulders, hips, etc. Swellings occur between the forearms and extend along the floor of the abdomen. Visible mucous membranes have the diag-

nostic paleness of anæmia. Occasionally there is a muco-purulent discharge from the eyes and nose. Muscular Atrophy is more or less rapid, but one circumstance which I particularly noticed, was that animals in a plethoric condition much more rapidly succumbed than those in an opposite state of health.

Comparing the above symptoms with those described in Dr. Livingstone's work, and having personally seen the insect, I have not the slightest hesitation in attributing the mortality amongst the transport animals on the Naga Hills to the tsetse fly.

Remarks.—Several of the ponies and mules at Golaghat, on the plains, appeared in good condition, and worked well there; but in a short time after being at Nichuguard or on the line of communication they never did a day's work, but died of debility, which was in all probability due to the attacks of this deadly fly. The discharge from the eyes and nose was of such a suspicious character that the transport officer considered that three ponies affected were suffering from Glanders, and accordingly had them destroyed. I found the mortality was greatest during and shortly after the rains, and the fly at this period was most prevalent. The transport animals at this time were picketted in the open; therefore the fly had every advantage of being able to get at his victims.

No cases, so far as I could learn, after the fullest inquiry, had ever been known to recover; therefore we may presume that, in the absence of any scientific treatment, the poison of the fly is an extremely deadly one. Of course, when speaking of the deadly nature of the poison in this instance, it must not be forgotten that, at the time so many of these transport animals died, they were fed upon whân—rice in husk—which is by no means a food-stuff suitable for animals undergoing hard work in a bad climate.

It is stated by Dr. Livingstone that this fly is found where there are elephants, which quite bears me out, for elephants abound in Assam—in fact, this country is the principal source of supply of those animals for the Government of India.

Horses are most susceptible to the poison of the fly; this was so well known that officers would take horses of no value to these hills when stationed there, as it was a well-known fact that they never lived more than two or three seasons.

During my investigation I was unable to trace any history of Anthrax, Surra, Bursauti, etc., which would account for this mortality. The remedies which I suggested to prevent the further loss of these baggage animals were: Entire removal of all transport animals during the season when the fly was most prevalent to Golaghat, on the plains; duties to be performed during the healthy months; coolie labour to be substituted over the Samaguting Hill; increased diet of a nutritious nature; improvement

of the roads; increase of establishment, as regards syces and grass-cutters; two salootries or native farriers to attend to sick and lame animals.

The above suggestions, I am pleased to be able to state, on hearing from the transport officers nearly two years afterwards, being acted upon, have resulted in almost eradicating the pest.

For the information of those who have not had the opportunity of reading Dr. Livingstone's work on South Africa I append the following, which refers to the tsetse fly:—

"We had come through another tsetse district by night, and at once passed our cattle over to the north, which, though only fifty yards distant, was entirely free from the pest. This was the most singular that we often saw the natives carrying over raw meat with many tsetse upon it. This insect, Glossina morsitans of the naturalists, is not much larger than the common house-fly, and is nearly of the same brown colour as the honey bee. The after part of the body has three or four yellow bars across it. It is remarkedly alert, and evades dexterously all attempts to capture it with the hand at common temperatures. In the cool of the mornings and evenings it is less agile. Its peculiar buzz when once heard can never be forgotten by the traveller whose means of locomotion are domestic animals, for its bite is death to the ox, horse, and dog. In this journey, though we watched the animals carefully, and believe that not a score were ever upon them, they destroyed forty-three fine oxen. A most remarkable feature is the perfect harmlessness of the bite in man and wild animals, and even calves, so long as they continue to suck the cows, though it is no protection to the dog to feed on milk. The poison does not appear to be injected by a sting, or by ova placed beneath the skin, for, when the insect is allowed to feed freely in the hand, it inserts the middle prong of the three portions, into which the proboscis divides, somewhat deeply into the true skin. It then draws the prong out a little way, and it assumes a crimson colour as the mandibles come into brisk operation. The previously shrunken body swells out, and if left undisturbed the fly quickly departs when it is full. A slight itching follows the bite. In the ox the immediate effects are no greater than in man; but a few days after the eyes and nose begin to run, the coat stares, a swelling appears under the jaw and sometimes at the navel, and, though the poor creature continues to live and graze, emaciation commences, accompanied by a peculiar flaccidity of the muscles. This proceeds unchecked until perhaps months afterwards, purging comes on, and the patient dies in a state of exhaustion.

"The animals which are in good condition often perish soon after the bite is inflicted, with staggering and blindness, as if the

brain was affected. Sudden change of temperature produced by falls of rain seem to hasten the progress of the complaint, but in general the wasting goes on for months. When the carcase is opened the cellular tissue beneath the skin is found injected with air, as if a quantity of soap bubbles were scattered over it; the blood is small in quantity, and scarcely stains the hands in dissection. The fat is of a greenish yellow colour and of an oily consistence. All the muscles are flabby, and the heart is often so soft that the fingers may be made to meet through it. The lungs and liver partake of the disease. The stomach and bowels are pale and empty, and the gall-bladder is distended with bile. These symptoms seem to indicate poison in the blood, the germ of which enters when the proboscis is inserted.

"The mule, ass, and goat enjoy the same immunity from the tsetse as man and the game. Many large tribes on the Zambesi can keep no domestic animals except the goat, in consequence of the scourge in that country. Our children were frequently bitten but suffered no harm; and we saw around us numbers of zebras, buffaloes, pigs, pullahs and other antelopes, feeding quietly in the very habitat of the fly. There is not so much difference in the natures of the horse, zebra, buffalo, ox, sheep, and the antelopes as to offer any satisfactory explanation of the phenomenon. Is not man as much a domesticated animal as a dog? The disgust which the tsetse shows to animals' excreta is turned to account by some of the doctors. They mix droppings of animals, human milk, and some medicines together, and put some on the animals which are about to pass through an infected district. This though a preventative at the time is not a permanent protection. Inoculation does not afford immunity, as animals which have been slightly bitten in one year may perish by a greater number of bites in the next. It is probable that with the increase of flies the game will perish, as has happened in the south, and the tsetse, deprived of its food, may become extinct with the large animals. The ravages it makes are sometimes enormous.

"Lehlunane once lost nearly the entire cattle of his tribe, amounting to many thousands, by intruding unwittingly upon the haunts of this murderous insect. The left bank is frequented by the tsetse and elephants, and I suspect that some connection exists between these two, as the Portuguese in the district of Tete imply when they call it the elephant-fly."

ABNORMAL RETENTION OF THE FŒTUS.

BY JAMES HUNTER, V.S., SKENE, ABERDEENSHIRE.

HAVING seen an article in the May number of the VETERINARY JOURNAL, by Mr. McGavin Montgomery, on the above subject, lamenting his unsuccess in operating, and soliciting an account of the experience of some of its readers in similar cases, and a considerable number of protracted bovine fœtal retentions having come under my notice and supervision, I may be allowed to communicate a note or two in point, with a very few general remarks. Recently, at Rogiehill, the largest dairy farm in Skene, I found a fine cow about two o'clock one morning, straining violently and bellowing out terribly—by the way, I rather like these crying cases. I was told her time was up, with three weeks of grace, and that she had been in calving pains, more or less, for a few days past, but had now become vicious and must be calved. On exploration I found no dilatation of the os uteri, and the constriction was so tense that I could scarcely suffer the pain by my index finger being forced in through the ring. I gave it as my opinion that she would require other three or four days before she could be calved with safety, and simply prescribed periodical lubrications of the vaginal passage and os uteri with vaseline and fresh lard or butter, and to have patience and not attempt to forcibly take away the calf too early. I was sent for on the fourth day, but they had her calved before my arrival. Next morning she went down with Parturient Apoplexy, but made an exceedingly satisfactory recovery, and is said to be the most useful dairy cow on the premises.

At Hatton, Kingswells, Aberdeen, I found a cow one night with the following history:—Sober appetite; had not been thriving well or looking very fresh for some time; six weeks past her calving time; had observed slight pains for about a fortnight, and that she had been in earnest calving for the past twenty-four hours. They had got a neighbouring farmer, a famed calver, but he had recommended them to send for me. On examination I found the usual constriction in such cases, and stated she would require to continue in labour a few days more, and then she might succeed. However, we had a bad state of the system and general debility to contend with, and ordered eggs and good milk, with six or seven quarts of London stout per diem, and pretty frequent manipulations with innocent oleaginous substances. After three days, what might be termed in size a monster calf was, with some difficulty, extracted, which did well, the cow remaining partially invalided for six weeks or so. Ultimately quite recovered.

At Bridgend, Alford, a few years ago, I found a black poll, of

the Tillyfour herd, one of the finest cows in the north—for that matter, in the world, I dare say—foaming at the mouth, roaring out, climbing the wall, and straining violently. The bailiff said she had been in calving for a considerable period, and he had tried her; the womb was shut and would have to be cut. I said, "Indeed! Why do you think so?" "Oh," he said, "there was a cow the very same at the last place I was at, and the vet. came and cut the womb." "Well, what was the result?" "Oh, he calved her." "Well, how did the calf do?" "Died next day, and the cow died about a week after." This cow was of a very sensitive nature, and on exploring her she pretty quickly gave me to understand I had very sensitive parts about me also—my shins. The constriction here, although very tight, I did not consider of an alarming character, and she being healthy and hardy, I advised them to let her alone, and nature in this case might succeed in her own good time. Forty-eight hours afterwards, the bailiff, on looking into the byre after dinner, found a dark beauty lying behind its spirited dam. They were left to their own endearments, and both did well.

Remarks.—These three cases are selected almost at random. All the most successful ones of a similar nature that have come under my notice were treated in a similar manner: Avoiding irritating and poisonous substances, rough handling, scratching, or operation in any form, with the exception of gentle manipulations with a large amount of innocent, oily material, and generous stimulating regimen up to the time of relaxation. In other forms of constriction of the os uteri, etc., where there is a cachectic, rheumatic, etc., diathesis, when the citadel of healthy vitality seems to be undermined and malnutrition rampant, the professional man needs to discriminate in undertaking treatment of such rickety subjects at so late a stage as the calving season, as he seldom gains much honour thereby.

"KHOOJLEE"; OR, TROPICAL PITYRIASIS.

BY R. W. BURKE, M.R.C.V.S., A.V.D., JUBBULPORE, INDIA.

In no department has veterinary progress been shown more conspicuously than in what is usually termed Cutaneous Pathology. This has undergone a complete revolution in England, on the Continent especially, and in India to some extent, during the last few years. The experience of recent years has caused an entire change in the ideas regarding treatment which was formerly recommended in this class of cases. In the ages when mysticism in its varied forms prevailed, although we find glimpses of the

knowledge that nature herself was generally expected to do all that was necessary, no practitioners were bold enough to hazard their reputation by acting up to this belief, but almost invariably resorted to some application and favourite internal remedy to give it due effect. To the German practitioners in a great measure is due the credit of having broken through these bonds, and raising the study of skin diseases in animals, thus paving the way for modern improvements in their treatment, on a level with the other branches of medicine.

From the earliest times the above disease has been described as an enzoötic affection, and internal remedies were prescribed. Spinola (*Speciellen Pathologie*, 1863) and other writers considered the cause to be some constitutional defect. Haubner attributed it to digestive derangements, and others, again, thought it was due to the itch-scab. Recently, Haselback (*Zeitschrift für Microscopie und Fleischbeschau*, 1884) has observed it in ten per cent. of the whole of the Polish horses, and he regards it as a special affection of the hair, attended by an adhesive discharge. Formerly a *false* and a *true* variety were described, which led to great confusion. "It is proved conclusively," says Professors Friedberger and Fröhner (*Lehrbuch der Speciellen Pathologie und Therapie der Hausthiere*, 1886) "to owe its origin simply to penetration of dirt, grit, lice, etc., into the hair-roots."

There is perhaps no subject in Indian military veterinary practice more interesting, and on which facts are more scanty, and its nosology less certain, than this, which must be my only plea for writing these notes. The disease, although long recognised in the human subject, has only recently attracted notice in the lower animals, and does not find a place in the new nomenclature of diseases issued for guidance of veterinary officers in India. Since my observations were published in my Annual Veterinary Report, 1883, and the VETERINARY JOURNAL, 1884, veterinary surgeons have described this affection as more or less prevalent throughout India, but especially during the hot weather, when the function of the skin is found to be normally active, and in a manner predisposed to disease.

The familiar cutaneous affection which is called "*Khoojlee*" in the horse is so prevalent in this country, and the disease so well marked in most cases, as to call for a special record for itself, and the following statement, based on a careful personal inquiry, will, it is hoped, fairly describe its most salient features, and convey, at the same time, some idea of its history and progress.

What is *Khoojlee?* Is it erythematous, or papular, or squamous, or vesicular, or pustular, or tubercular in its origin? Or is it a heterogeneous combination representing the diverse lesions or

types of disease of the skin that jostle one another in Indian nosology, and well known in all reports as so-called "Eczema" of the horse? It has not, I think, been settled whether the term Khoojlee is, or is not, properly defined; but we understand that there is no restriction here: it is used in a general sense, and applies to every form of skin disease which is attended with *itching*. If this is the case, it is a lamentable illustration of the urgent need for more precise definitions in this direction, and for the incorporation in the new nomenclature of diseases of the lower animals of a stringent rule requiring that all our diseases of the skin shall be properly designated, and their characteristics clearly differentiated. It is not now desired to enter into a consideration of all the diseases of the skin in which Khoojlee is a symptom: the disease under consideration goes by that name. In this paper we will invite our readers' attention to the subject of Tropical Pityriasis, or so-called "Khoojlee" of the horse.

In practice, veterinary officers have sometimes to rely on the nomenclature suggested by *salootries* and others in India, but the natives are not accustomed to name diseases according to scientific principles, and are thus not quite at home with Europeans as instructors in native disease.

Some veterinarians appear to be stirred over the question of a proper name for this, the most prevalent form of skin disease affecting the horse in India. The necessity for such a name will be apparent; but some are exercised over the special designation, preferring the term "Eczema" to Pityriasis suggested by ourselves (1. Annual Veterinary Report, 1883; 2. The Veterinary Journal, 1884; 3. The *Veterinarian*, 1885). I need not therefore re-state my reasons for considering this disease to be quite distinct from Eczema, except that a prevalent use of this term "Eczema" in England gives it special importance, where the occurrence of Pityriasis appears to be infrequent, if not very rare in the horse. It is possible that India is a special habitat of the disease, and especially so in the hot weather, when the function of the skin is normally active, which sometimes causes the disease to assume an enzoötic form. It is, moreover, important to note that this disease is chiefly confined to the more hairy parts, or parts fairly covered by hair; for instance, the disease never spreads to the under surface of the tail, although it attacks every other portion of it supplied with long hair. The disease, moreover, originates in small papules, the cuticle covering which dies from insufficient nutriment, and desquamates in small bran-like scales, and is attended with heat and considerable itching. The Germans also speak of it as "bran," or "flour eczema." There is no discharge present in this disease, nor vesication as in Eczema. Röll

says: "In this skin disease the epidermis peels off in small scales like those of bran. The disease attacks the horse principally on the head and sides of the neck, along the course of the mane and roof of tail, but occasionally all over the body. In cattle it attacks the whole surface of the body, and leads to changes in the structure of the skin" (*Lehrbuch der Pathologie und Therapie der Hausthiere*, 1885, art. "Pityriasis"). From excessive rubbing, for the parts attacked are particularly itchy, the exudation of serum, or of pus-like fluid may take place on the surface of the skin, which, though not a special feature of the disease, is a frequent accompaniment of it, and is one reason why the disease has been so often mistaken for Eczema. Pityriasis, moreover, selects for its attack the parts covered with the longest hair, even in man (Tanner's *Practice of Medicine*, art. "Skin Diseases"), which is what might be written in regard to the disease seen in the horse, and to which the common designation of "mane-and-tail" disease has been given, owing to the mane and tail being the parts most commonly affected. Again, the exudation may cause the scales to adhere together, forming larger scales; hence the liability of the disease in its latter stages to be mistaken for Psoriasis, from which it is distinct.

Semiology.

Small papules are noticed to develop themselves along the crest and about the root of the tail, on its dorsal aspect, and in due course desquamation of the cuticle ensues about each papule, from which minute white scales are regularly shed; and we have thus eventually produced a surface of renewed desquamation, attended by fresh developments and increasing irritation, with its results—extension of the process into the corium and subcutaneous connective tissue, which are sometimes also implicated, owing to secondary inflammation. The latter is only a complication, however, and furnishes no clue to the solution of the true pathological change found set up, which is, in its inception, distinctly superficial in character and amenable to proper treatment. A prominent and not the least troublesome feature of the disease is prurigo, which cause the subjects of it to rub themselves against adjacent articles, producing secondary symptoms of inflammation—heat, pain, swelling, abscess, and sometimes also permanent induration of the skin. The crusts, which are at first small, scaly, and transparent, become during the latter stages of the disease, larger, more opaque, and even adherent from admixture with inflammatory products. The hairs also, becoming involved and matted together, soon fall off, which is especially noticeable along the course of the mane and tail,

in the latter situation producing the condition commonly known as "rat's tail." Owing to the presence of long hair about these parts, the disease frequently escapes detection in the early stages, it being seldom noticed until, through rubbing, changes in the hair-papillæ and hair take place. The latter becomes at first thinner, curly looking, and, owing to its thinness and irregularity, allows more freely of the passage of dirt and filth of all kinds, which gives rise to inflammatory changes leading to depilation of the hair, sclerosis, etc. Where the disease has become chronic, the hairs generally assume a coarse appearance.

Complications.

I have seen so many cases of this disease each summer, for several years, that I feel warranted in giving a strong opinion that any treatment to be useful should be early applied, otherwise the disease tends to assume a chronic type, and will then prove rather troublesome; sclerosis of the skin and subjacent connective tissue may follow as a remote termination, and more particularly permanent induration of the crest, which is often produced as a result of certain heroic methods of treatment in vogue, which in a certain percentage of cases proves at least of diagnostic value, and heralds an attack of the disorder in the following year.

2. One of the results of its action on the hair is evidenced in the undue coarseness of that appendage, which is specially characteristic of this disease.

3. Another remote, though not infrequent result, is an apparent greyness of the hair noticeable in small spots along the course of the affected skin. These latter changes are, as we have seen, dependent on inflammation, causing irritation of the hair-bulbs.

4. It cannot be too strongly urged that *recurrence* in many cases also depends, to a very large extent indeed, upon how they were first dealt with.

5. In some cases the disease spreads all over the body, and leads to great emaciation.

Etiology.

Climate has a direct exciting and predisposing cause, as in the hot weather in India, when the kidneys are inactive, and the skin suffers from hyperæmia due to compensatory action. It is clear climate has a more or less direct influence upon the prevalence of this disease, which appears only during the hot weather and rarely in the winter, and is practically unknown or infrequent in colder climates, as in England, where veterinary surgeons seldom witness it, at least as a prevalent disease in the horse. A curious confirmation of this observation, the influence of a warmer climate,

is had in the fact of the disease being familiar enough in the warmer parts of Europe, although it is comparatively rare in England.

2. Natural dampness of the air, as during the rains in India, which causes maceration of the epidermis, and affects normal secretion of the skin (excessive perspiration), which in the sheep is one of the chief causes of skin disease in all its forms.

3. Local irritation connected with improper grooming, collection of dirt, of lice and ticks, etc.

4. An analysis of the urine of animals suffering from this disease showed a great preponderance of salts. Has the brackish quality of the water found in many districts in India, which is supplied to the horses, anything to do with the prevalence of this disease? We know that many salts exert a most marked action on the skin, as for example, iodine and bromine, producing characteristic eruptions; and inquiry may tend to show that this law may be still further extended in cutaneous pathology.

Pathological Anatomy.

The disease, in its origin, is superficial, and seldom or never implicates the *cutis vera* deeply, until the parts are rubbed by the animal in consequence of extreme prurigo, when subcutaneous effusions and other inflammatory lesions, leading to various changes in the structure of the skin, develop as a secondary process, but quite distinct from the primary disease. Changes in and around the hair follicles, such as have been described by Dr. George Thin, of London (the Veterinary Journal, July, 1879, p. 55), and noted by us in several cases we have examined, may then be detected, together with other changes associated with the derma, leading to depilation of the hair, to sclerosis, etc., which may be seen commonly characterising the latter stages of the affection. But, in order to arrive at its correct pathology, examinations should be made of the skin, more especially in an early stage of the disease, so as to recognise the specific lesions, which, so far as my own examinations lead me to say, consist mainly in cell proliferation confined principally to the deeper layers of the epidermis. This proliferation is doubtless a result of some constitutional irritation, which explains the consequent desquamation and shedding of the cuticle in small scales, due to improper nutrition, and which is so important a feature in this disease. When the parts are violently rubbed by the animal, or if irritant dressings have been used, then changes in structure may be detected in any part of the skin on microscopical examination; thus, changes in the corium, in the hair follicles and sebaceous glands, and in the subcutaneous connective tissue take place as the result of irritation, and may be characterised as *hypertrophic*. The disease

examined generally shows in the field of observation epithelial cells, fibrils, granular particles of pigment, besides tissue shreds and other inflammatory products developed in the process of secondary inflammation.

Treatment.

Pityriasis in the horse would seem a comparatively trivial ailment in England, which, under ordinary circumstances, would soon get well, but in the same class of patients out in India it sets up a disease of skin which almost defies treatment for several months in the year. Those who are engaged in the study of diseases of the skin in our animals in India will have come across cases of this disease which remain unrelieved, or at any rate uncured, by any local application, but which readily recover by the internal administration of medicines, and, as I have found, local blistering over the kidneys. In the treatment of chronic cases I have found nothing to equal the value of local blistering over the region of the kidneys. This treatment has been followed by rapid recovery in several cases, when all local applications to the skin and the internal administration of medicines had failed. It probably acts in two ways, viz., first, by rousing the kidneys to increased action, promoting diuresis and relieving hyperæmia of the skin; and secondly, by directly stimulating the nervous system through its action on the spinal cord, and the good effects produced may be purely of neurotic origin. I do not consider it necessary or prudent to have recourse to blistering in every case of skin disease as a routine treatment, but adopt it in neglected and chronic cases only. Observing its action on the kidneys, I was led to try the use of strophanthus in cases of this disease, with much benefit. Combined with local blistering over the kidneys, the internal administration of strophanthus in chronic affection of the skin in the horse proves very useful, because, as a diuretic, it is probably second to no other agent with which we are acquainted in practice, or which is more rapid in its action than strophanthus given in the form of tincture in repeated doses.

A partial cure is often effected by the local applications of many favourite remedies employed in rotation; by thorough cleansing of the skin with soap-stone (*reetáh*), or with soft soap and water every other day; and by keeping the animal on low diet. None of these, however, can do more than mitigate the trouble, and the probable ill-effects of such haphazard treatment and the danger thus incurred is proportionately enhanced by the fact that many of the older cases of previous years under this treatment are practically apt to suffer from a state of disease which may be designated as chronic, if not incurable.

Among the local applications employed in the treatment of this disease I may mention those of petroleum and *cheerpine* oil, which have proved most efficacious in my hands; and, in a minor degree, kerosine oil. We may be quite sure that the good effects produced by these agents are dependent upon some product of tar present in them, which is so beneficial in skin disease in general.

Sir Erasmus Wilson some years ago pointed out that tar used in skin disease in man immediately relieved all irritation; and Mr. Oliphant, writing on the properties of petroleum in skin affections of the horse, in a private cover, under date 5th Nov., 1887, says that "he never knew it fail to cure a case, either in the acute or chronic form."

Some persons believe that, with the advent of the cold season these cases get well of themselves, and without treatment. But this is an error, and the source of recurrence and non-recoveries innumerable. If we examine the veterinary history sheets of horses which have been affected we find that recurrence is the rule, and experience shows it is much more pronounced in cases where early treatment has been neglected. That failures will attend our best endeavours at treating disease we readily admit, for we cannot expect to find such a thing as an unalloyed blessing; and thus there are failures under this method of treatment, which in some cases arise from the owners' fault, who permit the disease to run on to an advanced stage, in which it is so severe and sometimes so intractable. I need not dwell on the importance of early treatment in so-called "trivial" cases, to nip in the bud an incipient disease, as unless this is done it will probably spread to the head and other parts of the body, and may then last for months.

NOTES ON "PARACENTESIS THORACIS": A SUCCESSFUL CASE.

BY G. GARTSIDE MAYOR, F.R.C.V.S., KIRKHAM.

DURING the past year, two cases have come under my care in which I have judged it advisable to puncture the chest wall with a view to relieving dyspnœa which threatened to be fatal; and as the first case is very remarkable (at least to my mind), by reason of the enormous quantity of fluid evacuated, and the other one more pleasantly so, by reason of its favourable issue, I hope these hastily written notes may be considered of sufficient interest to warrant the exercise of the *cacoethes scribendi.*

On the 20th of March, 1887, my attention was requested to attend

a three-year-old shire filly. The animal had been under my care about fourteen weeks previously for a sub-acute attack of Pneumo-pleuritis, with some degree of cardiac trouble, from which she had made a satisfactory (apparent) recovery.

On examination I found undoubted evidence that the animal must have been ill for some days at least, as there was some degree of lung consolidation with marked pleuritic, and I thought pericardial effusion.

Prognosis was grave. Treatment consisted in *carefully administered* diuretics and stimulants (with tonics later), and counter irritation to the chest; patient was placed in a large, airy, loose box, free from draught, well nursed, and clothed.

On the 24th the effusion was so great that I punctured the right side of the chest with an ordinary trocar and cannula, $\frac{3}{16}$ in. diameter, but to my great disappointment was only able to draw off from two punctures about a quart of serous fluid, although I of course cleared the cannula repeatedly (with probe, and even by oral suction and insufflation, this latter giving unmistakable evidence of much fluid above the orifice).

On the evening of the same day I operated on the right side, when a little over a gallon of fluid escaped; but again I felt sure the quantity should have been much greater.

However, by this operation the filly was very considerably relieved for two or three days, when symptoms again warned me that another attempt to evacute the chest must be made.

Meantime I had mentioned the case to a medical friend, who suggested the passage through the cannula of an elastic tube. On the 28th, having decided to re-operate, I injected forty-five minims of a five per cent. solution of cocaine at site of proposed puncture, and having waited a few minutes, snipped a small fold of skin with the rowelling bistoury, and passed the same instrument as before through the wall of the thorax; for a few seconds fluid escaped freely, and then almost ceased, and the cannula was several times cleared, both by mouth and syringe, without much greater success than before. Then I passed through the lumen of the tube a human gum-elastic male catheter (No. 12), and there commenced an escape of serous fluid which, so far as I can gather, is unique in quantity, as resulting from *one puncture*. Percivall speaks of having removed ten gallons in two operations.

For over three hours the small steady stream continued, during which time considerably over ten gallons escaped.

The pulse at the commencement of the operation was 130—quite imperceptible at the jaw; steadily it came down until, about twenty minutes after the cannula was removed, it reached about 75.

As might be expected, however, after such an effusion, our poor

patient, although immensely relieved for a time, lacked power to rally, and was found dead in her box on the morning of April 5th.

During the later stages of her illness she took oatmeal gruel, new milk, and eggs freely, but could never be tempted to eat more than a mouthful or two at one time.

Much to my regret I was unable to make a *post-mortem.*

Why was each attempt to evacuate the chest with the simple cannula, in the case of each of four separate punctures, comparatively unsuccessful? Was the chest entirely lined with false membrane? *Post-mortem* examination might have furnished some answer. But independently of any difficulty in the way, is it not better that the rigid metallic cannula should not pass far into the chest, and the comparatively innocuous elastic tube (catheter, or what not) should be the instrument to come mainly in contact with the delicate pleura? And still more is it not an advantage that the flow should be somewhat slower than a free stream through a comparatively large cannula would be? the shock to the system and reaction in the lungs must be lessened by a gradual, rather than a speedy removal of the incubus. (Of course, this latter point might be met by using a smaller trocar, but a tube to pass through a small cannula would require to be so very fine that the operation would be unreasonably protracted.)

The ease, both to patient and operator, with which the catheter can be cleared from time to time, if required, is another distinct gain.

On 29th August I was requested to see an aged cart horse. On my arrival at the farm (where from thirty to forty work-horses are kept) I found that a number of animals had been "down with Influenza," but by rest and nursing had recovered without medical treatment, and the owner, supposing this case to be like the others, had been expecting a like favourable issue.

On inquiry I found that for a week past the horse had eaten next to nothing, and for several days had been "taking his wind very thick."

Auscultation revealed considerable pleuritic effusion, with seeming indications of cardiac trouble. The pulse was ninety-six and very weak. The temperature I was unfortunately not able to observe, as I had just broken my last thermometer.

The case seemed almost without hope. I adopted appropriate medicinal and other treatment, but without avail. On September 1st the pulse was about 130, the breathing simply fearful, and death seemed as if hourly impending. I punctured the left side of the chest, passed the catheter through the cannula, and without any difficulty, or the slightest possible hitch, drew off over four gallons of serous fluid (markedly albuminous).

By the time the operation was concluded the pulse had come down to about eighty-five, the breathing was correspondingly relieved, and the animal shortly took a little food,—more than he had done for nearly ten days.

For about a fortnight recovery was very slow, and the heart's action not at all satisfactory, being at times intermittent, at times having a marked murmur "sliding away from" (Robertson) the first sound (which at the time I feared might be due to valvular insufficiency, but I now think has probably been caused by fibrinous coagula adhering to the chorda tendinæ).

However, the heart's action gradually improved, and as the appetite had become good, and the horse lay down regularly, the outlook became cheerful.

Briefly, by the end of the first week in October the horse was discharged from treatment, within about fourteen days afterwards he was put to work, and has been taking "full duty" ever since.

Of course it is not possible to generalize much from so limited evidence, but still the lesson which I have learnt from these two cases is that which I think applies to most *remedial* operations, *don't wait too long.*

ENORMOUS CYSTIC SARCOMA FROM TESTICLE OF A BULL.

BY FRANK W. SOMERS, M.R.C.V.S., LEEDS.

THROUGH the kindness of Mr. E. W. Darby, the energetic secretary of the Butchers' Association, Leeds, and whose interest in pathology is so great that I have had many pathological specimens brought before my notice, my attention was called to an enormously enlarged testicle on a three-year-old bull. It appears this bull had been brought in from the country to be slaughtered, hence I have no previous history of the case. I examined both testicles just before the animal was slaughtered, and after death I had a brilliant opportunity of a thorough examination. The left testicle was normal and weighed just one pound, whilst the right one was eighteen inches long and weighed fourteen pounds. On cutting into the abnormal testicle, I found it consisted of a large cyst with walls two inches thick; the walls were of hard fibrous structure. Two pints of fluid escaped from the interior of the cyst, and there was no smell whatever; the fluid was yellow, and of watery nature. Several hard caseous materials were in the centre of the cyst. Across the cyst walls several longitudinal bands stretched from one side to the other, of softer consistency than the outer walls, resembling in appearance the moderator band of the heart.

A section was taken for microscopical examination through the cyst wall, and through one of the bands above mentioned close to its attachment. The section through the cyst wall consisted of little but fibrous tissue, with a few small cell groups, and here and there the remains of an atrophied gland tube. The section through the band near the base showed it to consist of round cells embedded in a dense intercellular network. There were a few large cell masses of the myeloid type; much of the connective tissue had a very hyaline appearance, and in parts the growth appeared to consist mainly of spindle cells embedded in a somewhat hyaline matrix. Such a specimen as the above is of rare occurrence, and very unusual in the lower animals, and I take this opportunity of recording it. I am indebted to Dr. Jacobs, professor of pathology at the Leeds School of Medicine, for his kind assistance in microscopically examining the sarcoma.

THE USE OF ANTIFEBRINE IN VETERINARY MEDICINE.

BY J. A. NUNN, F.R.C.V.S., F.R.G.S., ARMY VETERINARY DEPARTMENT, NATAL.

This new antipyretic (Acetanilide phenyl-acetamide) has but lately been introduced into human medicine, and, from the accounts published from time to time, appears to be very highly spoken of as a means of reducing the temperature without producing any after ill effects. It consists of white shining plates or scales, that melt at 112° to 114° Centigrade, and boil at 292° Centigrade. It is insoluble in cold, partly so in warm, and entirely soluble, in alcohol or alcoholic liquids. It produces its effects in a little over an hour, lowering the temperature, and lasting for about six or eight. It decreases the frequency of the pulse, and, it is said, increases its tension. It has been given to the human being in acute Rheumatism with high fever with good results, and without any after ill effects on the alimentary canal, by which it is well tolerated. I have used it with success in this country in the obscure forms of continued fevers that animals are subject to, especially in the autumn, both with dogs and cattle, giving the former five-grain and the latter dram-doses every four hours in ether, which dissolves the drug perfectly. The fall in temperature is most marked, and is not accompanied by any of the nauseating effects that not uncommonly are seen after the exhibition of other antipyretics.

Antipyrine is another closely-allied compound. It is soluble in water, but the dose is four times greater for the human being than antifebrine (*Berliner Klinische Wochenschrift, No.* 20, 1884). Of

this drug I have no experience. I am unaware that, up to the present, any use has ever been made of either of these antipyretics, in veterinary practice—at least, I can find no mention of them in any of the professional works I have access to, in this country.

FIT OR UNFIT FOR HUMAN FOOD?

BY HAROLD LEENEY, M.R.C.V.S., EAST GRINSTEAD.

PRACTISING in a district where many cows are kept, it is often my duty to advise or decide upon slaughter, and of course the subsequent disposal of the carcase is a matter of much importance to the unfortunate owner. How to act for the best in these cases must puzzle other practitioners as well as myself, and it is for this reason I wish to invite the opinion of others, so that some sort of line may be drawn or practice adopted. In mentioning this subject, doubtless the first class of cases that will occur to your minds is Parturient Apoplexy, so common, so fatal, and rapid. Who is to say that the cow that was left chewing her cud over night and found insensible in the morning, is a fit or unfit subject for food? Scores of such cases have occurred in my district, and the practice I usually adopt is, to first satisfy myself that the case is hopeless as regards treatment, that she has not had aloes, turpentine, or other noxious drugs administered, and that she has a pulse that promises proper bleeding on arrival of the butcher. Given the foregoing conditions, it is my practice to advise slaughter, and subsequently inspect the carcase, and if found good in my opinion, I give a certificate to the effect that I have examined said carcase, slaughtered by my order while in a state of Parturient Apoplexy, and that in my opinion it is fit for human food. To avoid local prejudice, it is sent off in daylight to a carcase-butcher with printed label, having on it the sender's name and address, and in course of time a cheque is received by the sender for so many stone, at per stone from 1s. 8d. to 3s.

I have eaten such meat without being able to detect any defect, and feel confident that to bury or give it to the dogs is robbing the poor of sound but of course inferior meat. No one I suppose would call the flesh of a cow as good as a fat steer or heifer, but there is a vast difference between flesh that is in legal phraseology, "rotten, unsound, and unwholesome, and unfit for human food," and that which is merely second or third class meat.

Dr. Fleming sums up in the following terms in his valuable work on Obstetrics, page 649:—

"As to the propriety of using the flesh in this manner, there have been different opinions, but provided the animal has not been

drugged to any considerable extent before death, and it is killed early, we cannot see any objection to its flesh being consumed; we have no evidence whatever that there is any deleterious agent developed during the malady."

Surrounded by jealous quacks and with no veterinary surgeon near enough to consult, I have come into collision with the police and sanitary authorities, but my certificate has always carried my client safely through all dangers, though a notorious "cag-mag" butcher was prosecuted for offering for sale some diseased meat. It was in this wise: a zealous rural policeman, prompted by my drunken rivals, had followed a carcase which I had seen and advised, but not certified (for want of writing materials); the meat was condemned, the seller arrested, and the evidence made as black as—well, as black as it could be.

In my examination in the witness-box, I informed the magistrates that the cow I saw had but *one head*, whereas there were two upon the extemporised counter where the meat was condemned. Notwithstanding this, the case was dismissed, as the magistrates informed me subsequently entirely on my evidence.

Sometimes cows that, in my opinion, would be fit for food if slaughtered, are allowed to die and go to the kennels, because "people make such a talk about it" if slaughtered, and the owner is afraid of incurring the "hairbrained chatter of irresponsible frivolity." This should not hinder us from doing our duty, though the simpler, safer, selfish plan of doctoring till they die would be more consistent with our pecuniary interests, and not lay us open to the foolish gossip of the ignorant or the malignant criticism of unqualified rivals.

I will not on this occasion ask for more space, or enlarge upon the other cases in which one may advise slaughter for the market, but hope that my imperfect remarks may induce some better-qualified persons to give us their opinions, or record their custom of dealing with such cases.

Editorial.

ANNUAL MEETING OF THE NATIONAL VETERINARY ASSOCIATION.

The meeting of the National Veterinary Association at Newcastle-on-Tyne on July 17th and 18th was very satisfactory, a result largely due to the arrangements made for its reception by the local committee, which were remarkably complete and successful, and reflect great credit upon the organisers. Though this was the sixth year's meeting, the report of the Secretary did not show much progress in its development, the addition to its members being very trifling during this period, and certainly far below what it should have been, and what was expected when the Association was formed. Like nearly everything else connected with our profession in this country, it labours under disadvantages, which doubtless retard its prosperity and limit its usefulness. But, nevertheless, if enthusiasm and energy count for anything in ensuring success, then this will follow in the course of time; for those who have loyally supported it during the six years of its existence—and foremost amongst these must be mentioned its indefatigable Secretary—will, we feel assured, continue to do so, and their example must in due course influence those of their colleagues who have not yet seen their way to enrol themselves as members.

This year there did not occur much to mar the harmony of the meeting, and the discussions were generally interesting and edifying. A particularly pleasing feature was the presence of the Mayor and Sheriff at the opening of the meeting, and the attendance of several medical gentlemen, several of whom belonged to the staff of the Medical College attached to the Durham University. Some of these assisted in the labours of the meeting, and graced the dinner of the members on the evening of the first day, their expressions of sympathy towards the veterinary profession, admiration of the rapid progress it has made, and their hopes and good wishes for its future being gratefully received and reciprocated by the veterinary surgeons who had the good fortune to fraternise with them. The only matter for regret is that they were reminded, in a very painful manner and at a very inappropriate time, that they were human, and sometimes blundered. We hope their opinion of the veterinary profession was not diminished by the mistaken candour of the individual who thus reminded them of their faults; at any rate, their sense of propriety enabled them to conceal what they must have felt as an ungenerous and undeserved attack, and they did their best to show how little they merited it. Beyond this episode, everything appears to have gone off agreeably, and those who travelled to Newcastle-on-Tyne to attend the meeting will, we feel sure, long retain pleasant memories of their reception by their colleagues who dwell in and around that busy city.

ON THE MODE OF ACTION OF THE CONTAGIUM AND THE NATURE OF PROPHYLAXIS IN SOME INFECTIVE DISEASES.*

BY G. F. DOWDESWELL, M.A.

In a recent investigation upon Rabies, communicated to the Royal Society,† a short abstract of the results of which was published in *The Lancet*,‡ I have been forcibly struck with the fact that, notwithstanding the assiduous attention that has been given to the etiology of infective diseases and bacterial pathology during the last decade, the mode of action of the virus, and the intimate nature of Prophylaxis, have received the most scant consideration.§ It is to this circumstance, I think, in some measure, that the want of any substantial progress in our knowledge of this subject, and especially in the methods of treatment in infective diseases, is due. This is particularly exemplified in the disease here immediately in question, though this assertion may appear paradoxical, for if it be granted that a successful method of protective inoculation has been discovered and practised by M. Pasteur, it is certain that we are still in as complete ignorance—whatever we may assume—of the nature of the contagium as we are of its mode of action.‖ I wish, therefore, to call attention to the considerations that have suggested themselves to me upon these subjects, in the hope that discussion and experimental investigation of these particular points may tend to their elucidation and be productive of practical utility.

M. Pasteur conjectures that in Rabies the virus may be composed of two substances; the one a living organism capable of reproduction and development; the other chemical, "non vivante," which, "when in sufficient quantities," inhibits the development of the other.¶ This, propounded merely conjecturally, is essentially the same view as that which was originally formulated by Chauveau** for natural refractoriness to infection, and where he accepts Pasteur's previous "exhaustion" theory for the case of animals artificially protected by inoculation with an attenuated virus, and is very similar to the theory adopted by Toussaint to account for the refractoriness of some animals (Algerian sheep) to infection with Anthrax; it is generally known as the "counter-poison theory" of protection—viz., that in infective diseases pathogenic microbes elaborate within the tissues of their host a chemical product that is inimical to their own development, protecting from their future action, and preventing a recurrence of the disease.†† The other theory most in

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* From *The Lancet*. † Proc., vol. xliii., 1887. ‡ 1887, vol. ii., p. 680.

§ This subject is discussed by Dr. E. Klein in his work "Micro-organisms and Disease"; and this, with the exception of the articles by Dr. G. M. Sternberg, referred to below, is almost the only one recently published in this country.

‖ That I may not appear to contradict my own statements elsewhere upon this point, I will add that to "think strongly," as I do, that a certain organic form is intimately related to the contagium, is a widely different thing from logically demonstrating their identity, as has been done in a few other cases.

¶ His words are (Comptes Rendus, 1885, t. ci., p. 765): "Se pourrait il que ce qui constitue le virus rabique soit formé de deux substances distinctes, et qu'à côté de celle qui est vivante, capable de pulluler dans le système nerveux, il y en ait un autre, non vivante, ayant le faculté, quand il est en proportion convenable, d'arrêter le développemnt de la première.

** C. R. Acad. Sc., Paris, 1880, t. xc., p. 1526.

†† This view was not originated by Klebs, as has been said; he (Arch. f. Exper. Path. u. Pharmakol., Bd. 13, p. 284) merely notices briefly the article of Pasteur, Chauveau, and Toussaint, all published during the same year in Comptes Rendus. He designates the theory of the first-named as that of "deficiency," which view he himself favours. He refers to that of Chauveau as the theory of inhibition (Hemmung), whilst, somewhat singularly, he terms that of M. Toussaint the antidote or counter-poison view, though the latter in the passage noticed (C. R. t. xci., 1880, p. 324) only says that in the case of animals artificially rendered refractory to Charbon (Anthrax) their blood and lymph seem to have become unfit to support the parasite,

vogue of the causation of this immunity against infection, which was originated and advanced in the instance of Fowl Cholera, and of Anthrax by Pasteur himself,* is that during the progress of the disease the microbe consumes and exhausts some constituent of the tissues requisite for its own nutriment, and that this is not regenerated during the continuance of immunity. This is known as the "exhaustion" theory. Of these views neither the one nor the other appears to rest upon any sufficient basis of experiment or observation.

The theory of the elaboration by pathogenic microbes of a chemical counter-poison is founded upon the circumstance, as shown by Wernich and others, that in an artificial cultivating medium, many saprophytes, as well as ferments, form decomposition products, which are inimical to their subsequent growth and development, and it is supposed by some who have extended the theory beyond the meaning of its originator, that a similar process goes on in the course of a micro-parasitical invasion of the animal body; this, however, has not been shown to occur in any instance, nor can there be any true analogy between the case of an organism growing in a nutrient fluid of constant finite composition, where sooner or later it necessarily exhausts its pabulum, and the case of one developing in the animal organism, the cells of which have a constant power of secretion and regeneration. It cannot be supposed here either that any one constituent of these tissues should be permanently exhausted, without any appreciable derangement of their functions, as the one theory requires, or, in accordance with the other view, that the tissues should be saturated with a foreign substance, a decomposition product, toxical to the micro-parasite, and that this substance should be retained permanently, or for an indefinite time, without being excreted, and be altogether innocuous to them. Moreover, it has not ever been shown that in artificial cultivations any *truly parasitical* micro-organism does form a toxical soluble decomposition product, as saprophytes do, and this is probably a constant distinction between the two classes of microbes, parasitic and saprophytic.

In the case of one disease—Fowl Cholera—it has been proved by Pasteur that in artificial cultivation of the contagium, a microbe, the cessation of its growth is not due to the production of a substance toxical to it, but merely to exhaustion of its nutriment. He evaporated the fluid of the exhausted growth to dryness at a low temperature in vacuo;† then filling it up with fresh bouillon to its original bulk, the development in it of a fresh growth of the micro-fungus, when inoculated, showed the absence of any product, toxical or inhibitory to it. He subsequently‡ confirmed this conclusion by actual experiment upon fowls, injecting into them large quantities of the exhausted cultivation fluid, but found that they were in no way protected against subsequent infection by inoculation with the virus.§

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while M. Chauveau (loc. cit.) says that in Algerian sheep the microbe behaves as if the blood had become unfit for it by the presence of toxical substances. Consequently, the term "counter-poison" is more appropriate to the view of Chauveau than to that of Toussaint. The passages here in question are the first that deal systematically with the *modus operandi* of the methods of protection against infective diseases that have now assumed such a vast importance.

* C. R. Acad. Sc., Paris, t. xc., 1880, p. 952.

† Ibid., p. 248.

‡ Ibid., p. 1,030.

§ Since this was written MM. Roux and Chamberland claim to have shown (Annales de l'Institut Pasteur, 1887, No. 12, p. 563, and 1888, No. 2), in the cases of Pasteur's Septicæmia and of Charbon Symptomatique (Rauschbrand) that Prophylaxis, induced by the methods they advocate, is caused by the action of a soluble chemical substance, the product of, as they regard it, a pathogenic microbe; and M. Chauveau (C. R., 1888, p. 392) favours this view of the mode of action of Prophylaxis generally. Notwithstanding the pre-eminent authority on this subject of the latter distinguished

In the typical case of Anthrax,* also the same observer has shown that though fowls inoculated with its virus are normally insusceptible to infection with it, yet that when their bodily temperature, which is usually 103° F., is reduced by placing their feet in cold water the microbe is able to develop and produce the disease; and further, when the symptoms are fully developed, by again raising the body temperature the fowl recovers, but if cooled a second time the virus becomes as active as before. This clearly appears to prove, moreover, that this normal insusceptibility of fowls to the virus of Anthrax is not due to the presence in their tissues of a chemical substance toxical to the microbe, or a "counter-poison," for such a substance could not be conceived to appear and disappear on slightly depressing or raising the temperature, and for similar reasons it disproves the view that in this case the virus acts (toxically) by the production of a chemical poison.

Pasteur considers that in Anthrax and in Fowl Cholera † the virus acts by depriving the red corpuscles of the blood of their oxygen, as shown by the comb. He further says‡ that refractoriness to infection seems to him in all cases to be due to constitution, to "vital resistance," which opposes the multiplication of the microbe, the action of which as a cause of the non-recurrence of the disease he has explained§ by its altering or destroying some constituent of the tissues, which it either assimilates or burns by the oxygen which it abstracts from the blood, comparing the condition of a protected animal to an exhausted cultivation fluid.

That the virus does act by causing Asphyxia, in the cases mentioned, and in some others where it pervades the blood, appears perfectly correct; but that the protective action of a modified virus or of a mild attack of the disease should act in this manner by the partial consumption of oxygen in conferring immunity from, or an increased refractoriness to, infection is difficult to conceive; inasmuch as this view supposes the functions of the red blood-corpuscles as oxygen carriers to be permanently destroyed or impaired, and leaves only the view that refractoriness to infection is due to the "vital resistance" of M. Pasteur indeed, but that this is synonymous with the physiological functions of the tissue cells, the inherent properties of protoplasm, and

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investigator, the conclusion does not appear to me satisfactory, because neither Pasteur's Septicæmia or Charbon is a true and uncomplicated micro-parasitical disease as are Anthrax and Davaine's Septicæmia, where the microbe constitutes solely and simply the contagium, and where one viable cell is as actively and certainly infective as an infinitely greater number; while in the former cases the micro-organism at least requires the aid of a toxical fluid, the morbid product of inflammation, and is never, according to my own observation and the statements of others, infectively or actively injurious when inoculated in minute quantities, and consequently its action can only be regarded as secondary; hence these diseases are sharply distinguished from those that are truly micro-parasitical, as Anthrax, etc. In the case of Pasteur's Septicæmia, it was shown many years ago by Drs. Sanderson and Klein (Med. Chir. Trans., vol. lvi., p. 345, etc.; see also Proc. R. Soc., 1883, No. 223) that the disease, with occurrence of the same reputedly pathogenic microbe, could be excited by intraperitoneal injection of a sterilised chemical fluid. So that if it be considered (which is not my view) that the microbe is pathogenic, it follows that the same disease can be produced by different means, similarly to what is truly the case in the acetic fermentation mentioned below. M. Roux, in the article referred to, considers that in M. Pasteur's experiments above mentioned, Prophylaxis failed through his not injecting a sufficient quantity of the fluid. This, however, is a mere conjecture, unsupported by any evidence or experiment. If it be correct, nothing is easier than to prove it experimentally; but it does not touch the previous experiment of the growth of the microbe in exhausted cultivations, which the theory of a soluble counter-poison requires to be disproved. It appears to me that M. Roux's results are plainly accounted for by the circumstance, as mentioned above, that he was working upon epizootics that are not truly micro-parasitical.

* Op. cit., t. lxxxvii., 1878, p. 47.
† C. R. Acad. Sc., Paris, t. xc., 1880, p. 530.
‡ Ibid., t. xci., p. 537.
§ Ibid., t. xc., p. 954.

power of resistance to the toxical action of foreign cells or substances, which is the only view that appears consistent with the established facts of this case, and with the occurrence of induced refractoriness in other diseases by the protective action of a modified virus, or the occurrence of a mitigated form of the disease. This view has been well and clearly advocated by Dr. G. M. Sternberg* as well as Salmon,† the former of whom instances the acquired toleration of the organism both in man and the horse for arsenic, and of the former for opium and many other drugs; it will scarcely be maintained that this result is due either to the presence of a chemical counter-poison or to exhaustion of one of the elements of the tissues.

Another view of the *modus operandi* of protection in infective diseases is that lately promulgated by Metschnikoff.‡ It has been termed the "scavenger" theory, and is that the leucocytes or lymph-corpuscles in the spleen of other organs eat up (hence termed "phagocytes") the invading micro-parasites; this is a form of the physiological theory, but clearly as the appearances are described and figured, and probable as the conclusions of the author appear, it requires further investigation.

Similarly, too, it has quite recently been shown§ that certain low organisms —monads—may be gradually inured to a temperature far higher than that natural, and which would have originally been fatal to them; this increased toleration for heat is not surely induced by any chemical change in the tissues of the organism, but by physiological functions altered by habit.

Those who advocate the chemical view of either prophylaxis or the pathogenic action of microbes upon the animal organism overlook the fact that the ultimate action of any chemical substance upon the cells of the tissues is clearly physiological; it does not effect a decomposition of the constituents of these cells, as in the splitting up of the molecule of sugar by the alcoholic ferment; so that this chemical theory merely introduces a third factor in accounting for the action of micro-parasites, and is far from explaining or simplifying it. It has not yet been demonstrated or shown probable that in any case a *pathogenic* microbe acts by the production of or forms a soluble chemical substance, and herein is one distinction between septic and pathogenic or parasitic microbes; but, on the contrary, some of the earliest experiments upon the nature of the contagium—a true pathogenic microbe—in Anthrax by Davaine, Pasteur, Tiegel, Bollinger, and others, were by filtering virulent blood, which, when freed from the living micro-organisms by these (or, in some experiments, other) means, was found to be deprived of all virulence. These results, which disprove the presence and action of a soluble chemical virus in a truly micro-parasitical disease have never been controverted.‖

The theory of the production of ptomaines or soluble toxical alkaloids in putrefaction, and also of others—"leucomaines"—in the living body, as the product of the morbid metabolism of its cells, has recently been advanced by M. Gautier and others, and is assuming an importance which may greatly influence or revolutionise the pathology and views of the etiology of disease, and not impossibly affect our conception of the *modus operandi* of pathogenic microbes in some cases. It was, however, shown,¶ in opposition to the view of the production of ptomaines, that the toxical action of certain organic fluids was due to the presence in them of insoluble particulate

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* Magnin and Sternberg: Bacteria, 8vo., p. 246; New York, 1884; and *The Lancet*, vol. i., 1885, pp. 655, 695. See also Grawitz, Virch. Arch., Bd. xiii., S. 284.

† Rep. U.S. Agricult. Dept. in Bot. Gaz., vol. xi., No. 6, p. 241, etc.

‡ Virch. Archiv, Bd. cvii., 1887, p. 210; and ibid., Bd. xcvii., 1884, p. 511.

§ Address of the President, R.M.S., at the annual meeting, 1887.

‖ The most recent experiments and results of MM. Roux and Chamberland on this point I have noticed *supra*. ¶ Gaz. Chim. Ital., t. xiii., 1883, p. 172.

matter, and recently* Dr. Wooldridge, pursuing this line of observation, states that a microbe, said to be pathogenic in its action upon guinea-pigs, when cultivated in certain artificial albuminous fluids, produces an insoluble particulate precipitate which is toxical to the same animals. The facts are briefly stated, and no conclusion can be formed upon them; but should they be confirmed and the microbe proved to be *truly* pathogenic, which is doubtful, if it form an insoluble particulate precipitate in the blood of its host, this is an important observation, and may possibly account for the pathogenic action of the micro-parasite in Anthrax and other diseases. It is not inconsistent with the filtration experiments above referred to, nor the appearance of embolism with the occurrence of granular matter, which I have constantly observed as above mentioned. More recently still the same writer has stated in a note† that, by cultivations in *certain albuminous fluids*, the Anthrax bacillus forms a product which, by intravenous injection in rabbits, is protective or prophylactic against infection by subcutaneous inoculation made *immediately afterwards* with active Anthrax virus, but that the growth of the microbe itself in the modified fluid is by no means protective, nor is the fluid so when blood serum is used.‡

Here, *prima facie*, is a case of protection by the action of a soluble chemical substance, and one apparently toxical to the active contagium; it is, however, as yet too early to form any conclusions upon it. That the case is anomalous and not similar to that of the protection afforded sometimes by the action of a modified living virus (attenuated growth of the micro-fungus) is shown by the fact that cultivations, as stated, in blood-serum do not give the same result; and as it is said that inoculations of the active virus have been made *immediately* after injection of the protective fluid, it may have been retained within the blood-current, without elimination, sufficiently long to have acted toxically or inhibitorily to the active contagium, injected rapidly afterwards, but which would not be the case after some interval, and consequently the result would not be similar to that of vaccination or prophylactic inoculation in other cases. With respect to the statements by Dr. Cash in the same report, that injections of a solution of bichloride of mercury will give protection against subsequent inoculation with virulent Anthrax, these cannot be regarded as establishing any conclusions beyond the limited case stated, though the fact is of interest; but as it is stated that the immunity to infection so conferred endures for "five or six weeks," it is conclusive against the view of the action of a chemical counter poison, as such, for it can not be seriously contended that such a substance as corrosive sublimate persists unchanged in the tissues; and the result must obviously be due to its physiological action in increasing the "vital resistance"—*i.e.*, the normal activity—of the cells, and enabling them successfully to resist the attacks of a foreign organism. (*To be continued.*)

VETERINARY HONOURS.

We are pleased to announce that Professor Smith, Army Veterinary School, has been elected a Fellow of the Institute of Chemistry—the first member of our profession, we believe, who has had this honour conferred upon him. No less gratifying is it to mention that Mr. E. E. Bennett, Army Veterinary Department, has successfully passed the senior examination of the Royal Agricultural Society, which was held on May 8th and four following days. This entitles him to the Society's Agricultural Diploma, as well as its Life Membership and accompanying advantages.

* Report Med. Off. Loc. Gov. Bd., 1885-86.

† Proc. Roy. Soc., 1886, vol. xl., pp. 134, 313.

‡ These experiments do not appear to have been continued, from the Report Med. Off. Loc. Gov. Bd. (1886-87) recently issued, and can only be regarded as suggestive.

NEW INSTRUMENTS.

A PROPERLY constructed saw and knife are essentials to the proper performance of Smith's Sidebone operation. Messrs. Arnold and Sons have lately manufactured these from patterns furnished them by the introducer of the operation.

The great difficulty in sawing through the wall of the foot is to get deep enough at the upper part. This is provided for in the new saw (Fig. 1) by

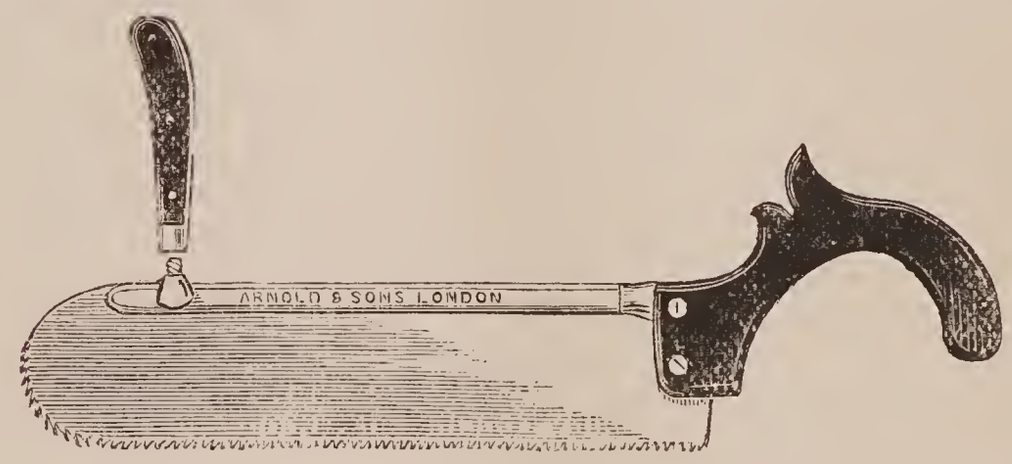

Fig. 1.

reversing the teeth at the rounded extremity, and cutting downwards by successive short cuts, and in order to obtain the necessary pressure a handle is fixed on to the end of the blade. This handle unscrews at pleasure for facility of carriage.

The knife (Fig. 2), which has a double edge, is for cutting the groove

Fig. 2.

between the wall and the sole; owing to its peculiar shape exactly the required amount of horn is removed, and there is no risk of damaging the sensitive parts within.

The suture needle shown below (Fig. 3) should prove most useful to all

Fig 3.

who have much of this class of surgery to perform. The needles of different sizes are contained in the handle, and are fixed ready for use by means of a strong thumb-screw.

The densest tissue may readily be penetrated without the slightest injury to the operator's fingers, and great rapidity in operating is obtained—a by no means unimportant advantage.

The eye of the needle is arranged on a well-known principle, being simply a notch to take the wire, silk, or other suture material. The needle is pushed through the two lips of the wound; the ligature material is then looped on and the needle drawn back; the process is extremely rapid. The loop should be made long, so that both extremities are between the operator's first finger and thumb of the left hand whilst the needle is being drawn backwards by the right hand.

INTERNAL TEMPERATURE OF THE SHEEP.

FEMALES.		MALES.	
104·2	104·0	102·6	104·0
103·8	104·4	103·8	104·6
104·0	105·0	103·6	104·2
104·4	103·8	104·0	104·0
105·2	104·8	104·0	104·0
105·0	105·2	103·6	104·0
103·6	104·4	103·8	103·4
105·0	105·8	105·0	104·2
104·2	104·4	103·4	103·8
104·0	104·8	104·0	103·8
104·8	104·8	103·8	104·0
104·6	104·0	104·2	104·0
105·0	105·0	103·4	104·4
104·6	104·0	104·4	104·8
104·8	103·8	104·0	103·4
104·6	104·0	104·4	103·2
104·2	104·4	104·0	103·8
105·0	104·6	104·2	103·8
104·2	105·0	103·8	104·0
104·6	103·8	104·0	103·8
104·0	103·8	104·0	104·0
105·8	104·0	103·4	105·0
105·0	105·0	103·4	104·0
104·0	104·4	103·6	104·2
103·6	104·0	104·0	104·2
Average temperature of 50 Females=104·4 F.		Average temperature of 50 males=103·9 F.	

Average Temperature of 100 *Sheep, Males and Females*=104·2 F.

I took these temperatures on June 13th and 14th, 1888, commencing each day at 10·30 a.m.; atmospheric temperature in the shade=65 and 60 F. The temperature was taken in the rectum. The sheep are one year old, "cross bred."

HUGH M. SINGLETON, M.R.C.V.S.

Proceedings of Veterinary Medical Societies, &c.

NATIONAL VETERINARY ASSOCIATION.

THE sixth general meeting of the National Veterinary Association was commenced at the Assembly Rooms, Newcastle-on-Tyne, on July 17th. The President, Professor W. Williams, F.R.C.V.S., Edinburgh, occupied the chair, and there was a large attendance, amongst those on the platform being the Mayor of Newcastle (Mr. W. D. Stephens) and the Sheriff (Mr. Jos. B. Ellis).

Welcome from the Mayor.

The President said he was sure they would all express their hearty thanks and high appreciation of the visit of the Mayor and Sheriff of the city. (Applause.)

The Mayor was exceedingly happy to have the honour of coming to offer them a hearty welcome to Newcastle. They were now a learned Society, and had made such great advances during the last few years that they were a power, and occupying a position they did not hold in former years. It was not inappropriate that he should be present that morning, inasmuch as he was President of the Local Society for the Prevention of Cruelty to Animals. This Society was much indebted to the Veterinary Association for the knowledge it spread, and they looked upon the Association as doing a great amount of good. Newcastle was the centre of a large district, and the members of their association had many opportunities of exercising their knowledge, and that knowledge had reached a high position, for it was professed by men of education and men of science who now entered their profession. He hoped the result of their conference would be the diffusion of that knowledge which was essential to the right carrying on of their profession, and that they would go away amply gratified, and with that kindly, jovial fellowship which showed they had learned something from each other, and were willing to communicate the knowledge they had gained in their own special department. (Applause.)

The Sheriff also cordially welcomed the Association, and pointed to the large importation of foreign cattle into this district as showing the necessity for our having the best talent of the veterinary profession in our midst. (Applause.)

The Annual Report.

The annual report was then submitted. It stated that the local secretary had taken advantage of his presence in Ireland this year of delivering a circular announcing the present annual meeting in order to increase the number of Irish members, and the result had been that fifteen new members had been elected. Hitherto the Association had been almost exclusively supported by English and Scotch practitioners, and, as a consequence, the gathering had been confined to England and Scotland. It was now suggested that the eighth general meeting should be held in Dublin, but to accomplish that it was necessary that the profession in Ireland should secure a strong representation on the Association's list of membership. During the year 39 new members had been elected, so that the total number of members on July 2nd last was 295. The treasurer reported that the Association was still in a prosperous condition. The year was commenced with a balance in hand of £13 2s. 3d., and including this, the total income had amounted to £141 1s. 3d.

Professor Walley, Principal of the Royal (Dick) Veterinary College, Edinburgh, moved the adoption of the report.

Mr. J. Bell, Carlisle, seconded the motion, which was carried.

The President's Address.

The President then delivered his address. He began by thanking them for the honour bestowed upon him in electing him as their president, and on behalf of the Provisional Committee gave the representatives a hearty welcome to Newcastle-on-Tyne, a city rendered famous by its commercial, industrial, chemical, and maritime enterprise; and illustrious by its association with the name of Armstrong, who had done so much to help them to defeat their enemies by land and sea. Since the society met last year they had to deplore the deaths of Professor Robertson and Mr. Harpley. During

the Jubilee year of Her Majesty their profession was not forgotten. The Principal Veterinary Surgeon to the Forces, as well as the Chief Veterinary Inspector of the Privy Council, obtained the Companionship of the Bath, and the President of the Royal College of Veterinary Surgeons was knighted. Few as these recognitions and honours were, they had done much to elevate the status of the profession, and no man need now be ashamed to acknowledge he was a member of it. He had known many men who, though daily exercising the profession as a means of livelihood, were offended when even their calling was specified on their letters. There were two matters he felt were acting prejudicially to the profession. The first was the keen competition for practice which existed, especially in our larger cities. He was informed by many, both in and out of the profession, that the competition and consequent cutting down of fees was so very great as to render it an impossibility in some cases to leave any margin of profit. This should not be. It was impossible for their profession to maintain any position in the world if its members allowed their sense of what was due to themselves, and the training they had undergone, to have so slight an influence on their mutual relations. Competition carried on to such absurd extremes could result in no benefit to any one of the parties concerned, and he thought that a very small amount of reflection would be amply sufficient to demonstrate its injurious effects. A word must also be said about the press. The press was always ready to diffuse information, and they constantly saw in the daily and other papers articles written by members of their profession, containing a large amount of information well worthy of their appreciation, and of immense value and advantage to the public. Who could deny that articles pointing out the causes, the prevention, and symptoms of such a disease as Anthrax —a disease common to man and the lower animals—or pointing out the danger of the milk or flesh of tubercular cattle, or demonstrating the danger of parasitic invasion, and consequent disease, and even death, arising from the consumption of under-cooked meat, were of the greatest utility? The writers of such articles were benefactors of the human race, and conferred a blessing on the community; and if they went no further than this they would deserve the thanks of both the profession and the public. But he was sorry to say there were other writers, some of whom were members of the profession, and some who were not, who in their writings in the press had overstepped the line of professional propriety, possibly inflicted serious damage upon those who were guided by them, and undoubtedly committed a serious offence against those members of the profession who had to maintain themselves and families in a position of respectability. He went on to quote answers given in a newspaper to correspondents asking for information as to diseases in cattle, the answers causing much laughter. No one could deny that their profession had, during the last few years, made considerable progress, both in theory and practice, and looking back even to the commencement of his own career, he could safely say that many fatal diseases had, thanks to their better knowledge of the laws of health, almost entirely disappeared. With regard to Pleuro-pneumonia, he thought it would have been better if the Government had instituted a further inquiry into the utility of preventive inoculation before determining upon wholesale slaughter as the only remedy. The poleaxe was a rough medicine, and subjected the dairyman to ruin. Perhaps among store stock wholesale slaughter was the most effective preventive to the spread of the disease, but his experience enabled him to state that inoculation prevented its spread, and as dairy cows were seldom or never sold from town dairies except to the butcher, inoculation would have been much more economical in the suppression of the disease. With reference to Tuberculosis, it was admitted by all who studied this affection that it was very closely allied to, if not identical with,

Consumption in man, and that it was transmissible from one animal to another, and from animals to man. Whilst admitting this, he might express the opinion that before all so-called tubercular animals were condemned as unfit for human food, a better understanding should be arrived at as to what true Tuberculosis was. Whilst they as a profession had done much that was satisfactory to themselves and to the public, they were still to some extent in a different position from their brethren in the medical profession. With them the relief of suffering and the prolongation of life were ends in themselves. If these be attained the medical man realised his ideal and established his reputation. From them more was expected. They had to restore to usefulness and to practical value. The medical man restored his patient to life and the enjoyment of a reasonably comfortable existence, though he might not have succeeded in restoring him to his former activity. Yet his efforts were rewarded by the highest appreciation. If their patients remained maimed or useless from a practical point of view, they found their efforts unappreciated or considered unsatisfactory. It was, therefore, more requisite for them by diligent study, by painstaking observations, and by single-minded devotion to their work, to merit success.

The Transmission of Disease from Animals to Man.

Dr. H. E. Armstrong, medical officer of health for Newcastle, read a paper on "The Importance of the Study of Comparative Pathology." In the course of the paper Dr. Armstrong pointed out how man's health may be injuriously affected by means of animals and the lower forms of plant life, and quoted instances of Scarlet Fever outbreaks that appeared to him to have been transmitted through milk from the cow. He said these examples represent merely a portion of what is known on this vital subject in respect of which the sum of our knowledge is as nothing in comparison with our ignorance. An ocean of truth lies still unexplored before us. The microbe theory appears destined to overthrow many old ideas and to enlighten much that has hitherto been in darkness. Much impediment to scientific progress on comparative pathology seems to result from the present system of approaching the entire subject. Instead of pursuing hand-in-hand the search after truth for the good of all, physicians and veterinarians are too apt to work in different, and not always converging, lines—sometimes apparently almost in antagonism, as though each party had a different interest to serve. Hence the want of full interchange of ideas and community of knowledge—and, as a result, apparent contradictions. Probably this condition of things is to a great degree due to the imperfect training students of each profession receive in this special department of their curriculum. Comparative pathology is not a thing in two halves, one of which belongs to doctors and the other to veterinarians. It is entire, and the common sphere of both. If the students of both kinds were taught this subject side by side, they would lay hold of it with a fuller, firmer grasp; and having once felt the advantage of working together, would continue to so work in after life to the general benefit. On the urgent need for such a system of study as regards those of his own profession, Dr. George Fleming makes the following observation:—"It is curious to find that while chairs are endowed at our Universities for teaching the most abstruse and unprofitable subjects (speaking comparatively), veterinary science and the science of comparative pathology, which are capable of conferring the greatest possible advantages in a humanitarian, scientific, and utilitarian point of view, should be so strangely connected." The want here so strongly expressed will not, it is hoped, so far as relates to the north of England at least, continue much longer. The medical faculty of the University of Durham are making preparation to meet it by the establishment of a veterinary department in their new college building now in course of erec-

tion at Newcastle, where it is proposed to arrange for the receptions of animals of different kinds, primarily for the purpose of studying their diseases in relation to those of man, in which object the science of bacteriology will properly form a prominent feature. It is unnecessary to enlarge further on the benefit to students of medical and veterinary science, to agriculturists and stock-owners, and to the public generally, to be derived from a department such as this. One thing only is wanting to secure its establishment and success, namely, money to meet the necessary expenses. Naturally, the college look for help, and appeal to those on whose behalf they are working. The nucleus of a fund has already been formed, and the first contribution to it was a handsome donation of one hundred guineas by a respected member of the National Veterinary Association, Mr. Clement Stephenson, of Newcastle-upon-Tyne. Whilst earnestly desiring to recommend this matter to the consideration of the members of this Association, I venture to express the hope that at no distant date the scheme as above outlined will have so prospered and developed that the veterinary students of the north of England, instead of having to seek their education at a distance, will be able, not only to study comparative pathology, but to complete their entire curriculum, and even obtain their diplomas after examination in the University of Durham College of Medicine at Newcastle.

(*To be continued.*)

Dinner at the County Hotel.

The annual dinner took place in the evening at the County Hotel, Newcastle. The president (Professor W. Williams) occupied the chair, and he was supported on the right by the Sheriff (Mr. Joseph B. Ellis), Professor Philipson, and Dr. H. E. Armstrong; and on the left by Dr. Gibson, Dr. Fleming, C.B., Dr. Drummond, and Dr. Oliver. The vice-chairs were filled by Mr. H. Hunter and Mr. George Elphick. The usual loyal toasts having been honoured,

The President proposed "The Army, Navy, and Reserve Forces." He said the members of the veterinary profession in the Army had shed great lustre on their body, and he paid a high compliment to the work done by the Chief Veterinary Surgeon to the Army, Dr. G. Fleming.

Dr. Fleming responded. He said that in regard to our defensive forces we were subject to periods of either apathy or panic. We now appeared to be verging into a period of panic. He did not think panics were things to be wished for. They were things to be shunned. A state of panic was not at all creditable to a rich and powerful nation. If we were undefended or not properly defended, it was the country who were to blame. They must remember that our Government by party entailed on the nation a very serious responsibility. A very strong party cry by the party that was not in power was retrenchment. A very strong motive for the party in power was to keep down expenses. Therefore, if the defensive or offensive powers of the country were weakened; if they had got below par, it was the fault of the country themselves. The public should see that the defensive and offensive forces of the country were kept on a good footing. With regard to the Army, many changes had taken place during his career. He thought our soldiers were as good as ever they were. They were perhaps younger, but that was a fault that was mending every day, and he confessed he had great faith in young soldiers. (Applause.)

Mr. Geo. Elphick also responded.

Mr. W. Hunting gave "The Royal College of Veterinary Surgeons." He said theirs was perhaps the youngest profession in the kingdom. They were only born somewhere in the "forties," and considering this fact he thought they had made tremendous progress. They had every reason to be

proud of what they had done and of the position in which they now stood. They were recognised by the State and appreciated by the public. What more could a profession want? (A laugh.) Well, some money, of course. (Laughter.) Their profession formed a department under Government, and it had done good work. They had rid the country of a tremendous outbreak of Cattle Plague, and on two other occasions, owing to the measures adopted and the way in which they were carried out, they had prevented the spread of disease except in a small centre. They had also stamped out by the means of this department the Foot-and-Mouth Disease, perhaps the most contagious disease, though not a very fatal one. It would not be long before they would stamp out another disease. Whether by inoculation or the pole-axe he would not say, but he believed that the next few years would see the country rid of Pleuro-pneumonia. They had also great hopes of getting rid of Glanders. Dr. Fleming in a report stated that the Army horses were entirely free from Glanders. He thought that reflected the greatest credit on the Principal and also upon his staff. The profession had done more than merely prevent contagious disease spreading. He thought they might claim to have done a very great deal for the hygienic arrangements under which animals were kept in this country.

Mr. WRAGG briefly responded.

Professor WALLEY proposed "The Sister Profession." He said the veterinary profession owed a great deal to the medical profession. All their early ideas were taken from the medical profession. Some of those who were the first to practise their profession were medical men, and he honestly confessed that so far as he was personally concerned he owed all his knowledge to the members of the medical profession. He had always, since he commenced the study of his profession, taken the greatest possible delight in getting hold of medical works and studying them even more than the works of the members of his own body. (Applause.)

Dr. C. GIBSON responded. He was sure Professor Walley was most anxious to do great honour to the toast, but he afforded them an intimation that they might have forgotten, and that was that the medical profession was not quite a perfect profession. They did sometimes commit errors, and he was sure Professor Walley and everybody present would pardon their shortcomings, for he suspected veterinary surgeons too sometimes made mistakes. (Applause.) He expressed his pleasure at being present, and concluded with a wish for the advance of the profession of veterinary surgeons.

Professor PHILIPSON also responded.

Mr. H. HUNTER gave "The Corporation of Newcastle," to which the Sheriff responded.

Mr. T. GREAVES proposed "The President," who suitably replied. The other toasts included "The Essayists," "The Provisional N.V.A.," "Local Veterinary Medical Associations," "The Secretary and Treasurer of the N.V.A.," "The Visitors," and "The Ladies," the latter toast bringing the proceedings to a close.

ROYAL SCOTTISH VETERINARY ASSOCIATION.

A QUARTERLY MEETING of this society was held in the library of the Royal Veterinary College, Edinburgh, on the 20th June, 1888. Professor Walley, President, occupied the chair. The following members were present:—Messrs. Burnett, Maybole; Fingzies, Lochgelly; Young, Leith; Fairbain, Cupar; J. Thompson, Lurgan; Player, McArthur, and A. Baird, Edinburgh; Professors Baird and McFadyean, Edinburgh; and Dr. Woodhead, Edinburgh.

Messrs. Day, Manuel, McGregor, and Bennett were present as visitors.

The minutes of the previous meeting having been confirmed, the SECRETARY intimated that the membership of the society was over forty, and sixteen honorary members.

The PRESIDENT then read a paper on "Malignant Aphtha in Sheep," at the same time exhibiting preserved specimens and drawings illustrating the lesions found in that disease.

The term Aphtha is most commonly applied to an eruptive affection localised within or upon the buccal membrane, mostly seen in young animals, and ordinarily known as "Thrush." This form of disease is, as a rule, benign in its nature. The eruption partakes distinctly of an aphthous character, is seldom followed by ulceration, and runs its course in a few days without any material damage, locally or otherwise, to the animals affected by it; and while it is most frequently seen in young animals sucking their dams, it is also occasionally seen in adults as the result of gastric or intestinal derangement, or as the result of the local action of some irritant such as acrid vegetable matter. Moreover, it has been attributed by some pathologists to the action of a fungus, the *öidium albicans*, while by others this fungus is not accredited with having any causal relationship to the disease, but is thought to be merely present as an accidental entity or as a concomitant.

In his admirable course of lectures on cattle pathology, Professor Simonds, during my pupilage, used to direct attention to a form of Aphtha affecting sheep and calves (first seen by him in 1832) which was characterised by a buccal eruption of a destructive character, and which in the case of sheep was preceded by similar eruptions on the udder and teats of the ewes. Professor Simonds attributed the disease to hæmal depravation or degradation arising out of improper or injudicious manuring and feeding, coupled with unfavourable atmospheric conditions. I confess that prior to the present season I was of the same opinion, and I think I am right in saying that a similar view is entertained by other veterinary surgeons in this country. Several years ago Professor Axe recorded some cases of this nature which in his opinion were originated by the action of vetches that were not only infested with caterpillars and different forms of insect life, but which were also mouldy and decayed.

The past season has been most noteworthy for the existence of large numbers of these cases. In Scotland it has occurred, so far as my information goes, most largely in the eastern counties; in England Professor Duguid and Mr. Olver, of Tamworth, have each met with extended outbreaks of the affection. That the unusually severe weather prevailing in the latter months of winter and during spring has had much to do with this excessive prevalence there can, I think, be little doubt; but by this I do not wish it to be assumed that I consider that these influences are, in themselves, sufficient to originate the disease; probably the casual entity in the form of a micro-organism has always existed, but the lowering effects of the adverse influences to which I have alluded must have rendered parturient animals peculiarly predisposed to the attacks of enzootic or epizootic maladies.

Sheep breeders and shepherds are quite familiar with, and are prepared to have to contend with, a certain percentage of cases in the udders of ewes, which they are in the habit of describing as "chaps," "cracks," etc., and probably this fact has largely tended to mislead them as to the destructive characters of the prevailing malady, and has thus been the means of materially increasing their losses.

Before proceeding to notice the characters of the affection under consideration it will be well that we should devote a brief space to the discussion of its nature.

The word aphtha is derived from a Greek word signifying "I inflame," and it is usually applied to an inflamed condition of the skin or of a mucous

membrane, accompanied by an eruption of minute vesicles, often in successive crops; or by rapid proliferation, degeneration, and desquamation of the epithelium or of the epidermis; this being followed by regeneration, and little or no loss of substance.

Now, how far does Malignant Aphtha conform to this description? Only to a very limited extent, or rather, I should say, that it extends far beyond it. That there is inflammation of the structures involved is unquestionable, that there is any vesicular eruption is doubtful, or at least if it does exist it is of very short duration, so short in fact that one would require to pay particular attention to individual cases, and watch closely for its advent in order to detect it. If we look at the primary eruption on the skin of the udder and thighs of the ewe, we find in some cases a distinct Erythema. This is followed by the formation of discrete pustules—possibly preceded by vesication—about the size of a vetch seed to a large pea, and succeeded from twenty-four to forty-eight hours by the formation of a sore which gradually becomes enlarged in a circumferential manner, and ultimately becomes covered by a crust or scab, underneath which a destructive or ulcerative inflammatory process is progressing. This diffusive or spreading tendency ultimately leads to confluence of the eruptions, and if any irritation is applied, *e.g.*, by the hand of a milker or the mouth of the offspring, in the case of the teat, or by the attrition of the udder against the inner surface of the thighs, very large sores are formed and the destructive process is extended. If the scab is prematurely raised, minute granulations, interspersed with depressions, as the result of loss of substance, are exposed.

In the case of the worst sores, healing is materially prolonged, and in fact is carried on by circumferential cicatrisation, much in the same way as is sometimes seen in the mammary eruptions of sows in Swine Fever.

In other cases the Erythema is less marked, and numerous papulæ about the size of a small pea are scattered over the surface of the udder and the teats. These are followed by a breach of surface without distinct pustulation; or pustules form on their summits. But, as in other affections of an allied character, the papulæ may fade and nothing more serious than desquamation of the cuticle may occur.

These lesions differ widely from Aphtha, as it is ordinarily understood, and approach more nearly to the characters of Variola; indeed, so striking has the resemblance in some cases been that had I not been conversant with the fact *that Sheep-pox is always an exotic affection*, and that the animals which have come under my observation could not possibly have come in contact with foreign animals, and, further, that none but lambing ewes have been permanently affected, I should have been inclined to think that I had to deal with outbreaks of Variola Ovina.

There is no disease with which I am acquainted that more closely resembles the one under consideration than the eruptive affection we meet with in cows and that which we have been in the habit of designating "varioloid,"—a disease I may observe that has recently been prevalent in this neighbourhood and to which I have applied the term *Pustular Fever*. The incubative stage differs but slightly in each case; their lesions show, within certain limits, striking analogies; their course is on the whole identical, but, so far as I have been at present able to determine, a wide divergency occurs in the fact that in the cow the malady is non-infective, except by inoculation, to the offspring.

The ulceration of the lips of the lambs is similar in character to that which I have seen in calves when sucking cows while suffering from severe forms of Foot-and-Mouth Disease.

Taking into consideration the nature of the lesions and of the constitutional characters of this malady, I am of opinion that, as applied to it, the term

Malignant Aphtha is a misnomer; and that "Pustular Fever" or "Contagious Ecthyma" should be substituted for it.

Characters of the Disease.—Postular Fever primarily affects the dam, but so soon as the pustules burst, or a breach of surface is produced, infection of the mouth and of the skin of the nostrils and of the lips of the suckling follows. The site of the eruption may be at the edge of the lips or of one or both nostrils or the gums, most largely the labial aspect of the gums and the incisor teeth. At the outset the eruption on the skin presents itself as a raised inflamed patch, but it is quickly followed by a breach of the surface, and the formation of a rapidly spreading or extending sore, which becomes covered with a distinct crust or scab of tolerable thickness and firmness, and if this is lifted or detached a suppurating and ulcerating surface is exposed. On the mucous membrane there are also circumscribed patches of inflammation, the surface of which appears to become aphthous or postular. This is succeeded by distinctly marked ulceration extending through the mucosa, and this again by the throwing out of croupous masses which may be readily mistaken for granulations. This croupous process is often followed by the formation of bodies which may assume very large dimensions. The teeth become loosened and frequently fall out, not only as the result of involvement of the alveolar membrane in the ulcerative process, but by virtue of the pressure exerted by the granulations.

As in other forms of Ulcerative Stomatitis, so here, the ulceration extends not only by continuity, discrete ulcers becoming confluent, but by contiguity also; thus, if an ulcer forms on the border of the lower lip, the opposing part of the upper lip rapidly becomes infected. And even in the case of the ewe, an ulcer on the skin of the mammary gland will extend by contiguity to the skin of the thigh without primary redness, papulation, or postulation occurring, and this extension is more certain to take place if the skin of the thigh is by any means wounded; while contact of the discharges from the sores with an exposed cutaneous surface not only on the body of the sheep but of at least in one other species of animal, invariably excites the formation of a lesion identical with the primary ulcers.

The general and constitutional conditions observed in the ewe are those of fever; the temperature varies from 103° to 106° F., occasionally 107°. The conjunctives are injected, the pulse rapid, and the respiration more or less disturbed. In the milder cases the lacteal secretion is not materially diminished or altered, and there is a sufficiency of milk to satisfy the offspring, nor is there any marked wasting of the body; but in the more severe cases not only is the secretion of milk suppressed, but emaciation proceeds apace, the animal becomes weak and depressed, the pulse very rapid and feeble, and all the normal functions are more or less interfered with; death resulting either from exhaustion or Septicæmia, or in consequence of the occurrence of some important complication.

The complications to be dreaded are gangrenous inflammation of the mammary gland (so-called Udder Clap), or a low form of inflammation of the lungs or of the serous membranes, particularly the pleura.

The mammitis is in some cases due to blocking up of the orifice of the teat or teats, in others to septic contamination, and when once sphacelus commences (and it usually does so around the base of the teat) it rapidly involves the whole of the gland, and may extend to contiguous structures.

By some this destructive mammitis has been likened to the infective ovine mammitis recently described by Professor Nocard as being of frequent occurrence in certain districts of France, but I am in a position to say that there is absolutely no resemblance—with the exception of the ultimate end being in each case gangrene—between the two maladies.

The lung and pleuritic complications are of a low type, resembling the

complications of Influenza and allied affections, and the pleuritic products are of a highly infective character.

On *post-mortem*, Dropsy to a greater or less extent of the pericardium, the thorax, and the abdomen is present, even when there is no trace of inflammation of the serosœ; and this fact, coupled with the existence of systematic extravasations in some cases, is sufficient to indicate the constitutional nature of the disease, quite independently of the occurrence of specific local lesions.

The constitutional conditions observed in the lamb are also those of fever; but in mild cases, or so long as the lesions are localised, the animal's general health is not materially affected, the appetite is good, the animal is lively, and there is no marked interference with nutrition.

In very many cases, however (and doubtless the number of such instances has been largely increased by the interference with the natural functions of the skin, and by chill resulting from the inclement weather), the general health is materially affected; the animals wander mopishly about, with head depressed and ears lopped, and emit a miserable baa! There is a catarrhal discharge from the nose, stiffness of the limbs, and profuse Diarrhœa of a very exhausting character.

In one or two instances which have come under my observation there has been Catarrhal Inflammation of the interdigital skin of one or more feet, but this may have originated quite independently of the constitutional disorder may, in fact, have only been a form of "dew scald."

The most dreaded and most fatal complications met with in lambs are Pneumonia, Pleurisy, or Pleuro-pneumonia, and in some instances Peritonitis. The pneumonic lesions bear a close resemblance to those of Swine Fever, while the Pleurisy is always of a septic character. Peritonitis is in a small percentage of cases associated with, and is doubtless due to, Omphalitis or Omphalo-phlebitis. In those cases in which Diarrhœa has been excessive Muco-enteritis is detectable on *post-mortem* examination.

The *treatment* of this malady is under ordinary circumstances satisfactory and simple, but when the lowering effects of exposure, neglect, and improper feeding are superadded, it becomes very unsatisfactory, and of little practical use.

The conditions necessary for securing success in treatment are that the cases shall be attended to immediately on the advent of the local lesions, that the patients shall be protected from the adverse influence of cold and wet, and particularly from east winds, and that they be generously fed.

So far as the lambs are concerned, they should be removed at once from the ewes and fed artificially, and the milk should be carefully removed from the udders of the latter by the hand, great care, however, being exercised in the process to avoid irritating the sores. The use of the syphon, except in those cases where the apices of the teats are encrusted with scabs, is not advisable, and in any case it should be carefully cleansed and asepticised before it is used. If gangrene is threatened the teat or teats should be immediately excised, the gangrenous area slashed and asepticised, or, if means are at hand, irrigated with an antiseptic or disinfecting solution.

The sores on the mammæ and thighs of the ewe should be cauterised at the outset, and subsequently dressed with mild antiseptic and astringent applications, but irritation by friction or otherwise should be strictly avoided.

In the case of the lambs the adoption of an abortive system of treatment is advisable—*i.e.*, if they are removed from the ewes immediately on the advent of local lesions. It is useless in those cases which have been neglected, or where the lambs have been allowed to suck the ewes for too long a period. The choice of abortive agents must be regulated to a large

extent by the character of the lesions in particular cases. Personally I prefer iodised phenol.

Systematically the administration of mild laxutives and blood medicines is indicated, both in the case of the ewes and of the lambs; and when Diarrhœa becomes excessive in the latter, skim milk mixed with lime-water should be substituted for sweet milk, and digestion further assisted by the use of some preparation of malt. It is not, in my opinion, wise to check the Diarrhœa unless it becomes excessive, as it may be the means, to a large extent, of depurating the blood, but if it is allowed to continue, it may, of itself, produce death by exhaustion.

Strict isolation of affected animals ought to be practised, and that, too, at as early a period as possible. I am in possession of the most indubitable proofs of the infective and contagious nature of the malady, and all our old ideas as to the disease having simply a dietetic or local origin must be relegated to that limbo where so many ideas have gone during the last decade.

Professor Walley also submitted the following specimens :—

(1) Aneurismal varix of the spermatic vessels of an ox, a very remarkable specimen. The description given by the Professor was highly interesting.

(2) Traumatic Pericarditis in the cow, accompanied by fatty encasement of the heart. Professor Walley said that this case did not present any marked characteristic, so far as the pericardial and epicardial lesions were concerned, to distinguish it from hundreds of similar cases met with by veterinary surgeons. There was the usual thickening of the membranes, with the outgrowth of innumerable granulations from the free surface, the intimate adhesion of the peri- to the epicardium at the point of penetration of the foreign body, which was still *in situ*, and general hypertrophy of the heart itself. But there was an important addition to the lesions usually observed in these cases—viz., the deposition of a layer of adipose tissue under the epicardium, which in many places attained a thickness of over an inch. The pressure exerted by this deposit has caused extensive absorption of the cardiac muscle, and must have interfered materially with the contractile power of the heart during life. He thought there could be little doubt that the exciting cause of the deposition was the persistent irritation caused by the foreign body. He had twice previously met with similar conditions in organs of the cow—viz., the spleen and the rectum.

(3) Unusual skin lesions of Swine Fever in sows. In submitting these specimens the President said that during the course of a recent outbreak of this disease, in which there was an entire absence of general skin lesions in the case of a young sow, he observed a number of diffused sores on the skin of the mammæ mainly around the base of teats, and in some involving them. On first examining the sow he thought the sores might be due to friction from the mouth of the pigs, but closer examination showed that the lesions were of a specific character. He ordered immediate slaughter of the animal, and on *post-mortem* examination the characteristic intestinal lesions were discovered.

About ten days subsequently another sow in the same piggery presented similar conditions.

(4) Entozoa forwarded by Mr. Edward Stanley, Government Veterinary Surgeon, New South Wales. These comprised several specimens of *Spiroptera Megastoma*, *Strongylus Tetracanthus*, *Strongylus Armatus*, and *Tænia Mamillana* from the horse, and *Strongylus Hypostornus* from the sheep.

Dr. WOODHEAD said, with reference to a deposition of fat around the heart in a case of Traumatic Pericarditis, that it had forcibly reminded him of a similar condition commonly met with in cases of granular contracted kidney of the human subject. In the latter case it was evident that the deposit of

fat was secondary to the atrophy of the kidney, and the same was seen in the case of other organs. It had therefore occurrred to him that the thinning and atrophy of the heart-muscle in the case of the cow's heart was probably the result of the Traumatic Pericarditis, and not of the fatty deposit, which would be likely to ensue as a sequel to the cardiac atrophy.

Professor McFADYEAN said that he had been most interested in the remarkable form of skin lesions from Swine Fever cases exhibited by the President. He thought they were quite unique, inasmuch as they were almost identical in their naked-eye appearances with the common-ringed ulcers of the bowel. It seemed as if the specific organism of Swine Fever had in these cases taken up its position in the skin, and had there set up a necrotic process similar to that excited by it in the mucous membrane of the bowel.

Dr. WOODHEAD exhibited and explained a series of large mounted sections illustrating Tuberculosis and other diseases of the human lung, in order that the members might have an opportunity of comparing such conditions with those met with among the lower animals. He also showed under the microscope specimens of the *Bacillus Tuberculosis* from human sources, for comparison with examples of that organism which Professor McFadyean exhibited from the domestic animals.

Professor McFADYEAN submitted the lungs of a cat showing Tuberculosis, and specimens showing the lesion excited in the lungs of sheep by the *Strongylus Rufercens.*

The microscopical and other specimens were very interesting, the members present thoroughly enjoying the clear and lucid description given by Dr. Woodhead.

On the motion of MR. A. BAIRD, a hearty vote of thanks was accorded to Dr. Woodhead, Professors Walley and McFadyean.

W. D. FAIRBAIRN, *Hon. Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

A MEETING of the above society was held on June 20th, in the London Hotel, Edinburgh, the President, C. Cunningham, Esq., in the chair.

There was a good attendance. The minutes of the previous meeting having been read and confirmed, the President notified the purchase of the Thompson Tooth shears and despatch box, property of the late society, and further that by agreement the minute book of the late society had been deposited with the Highland and Agricultural Society. The following new members were nominated:—James Borthwick, Kirkliston, by Prof. W. O. Williams; H. Thompson, Aspatria; J. Black, Howgate; J. Brown, West Calder, by the President.

The President then delivered his inaugural address, as follows:—

GENTLEMEN,—The end of an old society, and the beginning of a new, leaves its mark on our history. For twenty years some of us in our society life have, as it were, been journeying together. A few months ago we broke the journey. We are off with the old and on with the new, and before starting afresh it may be well just for a very little to look back on the way we have come, and forward to what may be in store for us. How has it fared with us and our profession these few years back? What is our probable future?

A glance such as this—and it must be but a glance—brings with it mingled feelings of pain and pleasure. Some who were with us ten and twenty years ago are not with us now, though it is a matter of congratulation that almost all the members—original and otherwise—of our old Scottish Metropolitan Society remain. There is, however, one notable exception. Our first President, the late Professor Robertson, then Mr. Robertson of Kelso, has passed away. "A good man," truly says one of his contemporaries, "has gone to his rest." Few men we daresay knew

more and had experienced more of the pleasures and vexations of a country practitioner's life, but neither the work nor the worry nor the lack of leisure and opportunity could bind Mr. Robertson down to the rôle of an ordinary veterinary surgeon's life. "Science with practice" seems to have been his motto, and when at but very short notice he was called to fill one of the highest, if not the highest and most responsible post in his profession, he was ready and willing and able. He was one as a member of our Scottish Society, as a Scottish veterinary surgeon, not less than as Principal of the London School, of whom we were always proud, and his loss is felt deeply.

A life of this kind, gentlemen, I trust you will excuse my saying, teaches a lesson. "Science with practice" or at least "Practice with science" should be the motto of every veterinary surgeon. Are some of us not a little apt to forget it?—to cultivate well the practical work of our profession, and to pride ourselves on our plain practicability, while we neglect the scientific part, and lay it on the shelf as a matter that does not pay, and with which we wish to have little to do. Many of us have our little pleasures and pleasant places. But we fear a comparatively smaller number have and systematically use their own special little laboratories and scientific apparatus, their little dissection rooms and studies. The cost and time is about the same in either case—are the desires equal?

Five years ago the Council appointed only veterinary surgeons as examiners. This year they have returned to the former practice of appointing specialists in certain subjects, drawn from the ranks of the medical profession, tacitly acknowledging the inferiority of their own graduates. Why should we not have specialists drawn from our own ranks? A veterinary surgeon—in all belonging to his profession—ought not now-a-days to be behind his medical neighbour. What is to hinder a few at least from rising to be specialists in chemistry, in botany, pathology, morbid anatomy, and allied subjects?

A short time ago we read that the Royal College of Physicians of Edinburgh had established a laboratory for the purposes of research in all subjects bearing upon medical science. A large house has been leased, and the premises converted from their old to their new use. We read, too, that it would be difficult to find a laboratory in Britain more thoroughly equipped for the purposes to which this one has been set apart, and that already there is a small army of diligent workers in the various departments. What the Royal College of Physicians of Edinburgh alone has done on such a large scale, may not the veterinary surgeons of Great Britain and Ireland hope in time to imitate in humbler guise? Depend on it if the medical faculty find it necessary and to their advantage thus to establish laboratories and give facilities for their fellows, members and graduates thus to prosecute research the time will come when the veterinary profession will have to follow in their footsteps. "Recent advances in science," it has been said, "have opened up a new germ world for investigation, full of marvels undreamt of by our forefathers." And we or those who come after us will be compelled to leave the old ruts and follow on. All honour to our teachers and schools and others for what they have already done in this respect. All over the country at the present time we have practical men—men of practice and skill, thoroughly up to their work, in whom every confidence can truly be placed, men of whom the veterinary profession may well be proud. May she in the future in addition have also added to her ranks still more men of science—specialists in the true acceptation of the term, in everything worthy of investigation.

Closely allied to the scientific aspect of our calling is the question of "Vivisection." A burning question not many years ago, and even yet far from settled. Vivisectors and non-vivisectors battled against each other;

the Anti-Vivisection Act, with its licences and restrictions, was the result. We confess that our sympathies in the main are with the poor dumb animals. No doubt when scientific men make discoveries, it is a hardship that they are not free to conduct experiments to verify or falsify their statements. Much of our physiological and pathological and surgical knowledge comes from vivisection. Our primary amputators, vaccinators, inoculators, ovariotomists, abdominal and thoracic operators and such like were simply vivisectors, doing their best for suffering men and animals. Still admitting this, I think we will all agree that the less vivisection the better. If for the sake of science and humanity severe and cruel operations must occasionally be performed on the lower animals, that is no reason why every one should have liberty to repeat them *ad libitum*—let these operations be performed by such thoroughly skilful hands and in presence of such reliable witnesses that a repetition of them may not be required. The licensing system, though it presses hard on individual cases, yet on the whole seems a natural and not unfair solution of the difficulty. Our main objection to it is the constitution of the licensing body. We think it very hard that men of science, known for their skill and humanity, should have to ask leave from the Home Secretary, or those whom he chooses to consult or appoint. Great must be the political, agricultural, metropolitan, and general public mind. It fills our licensing boards, our contagious diseases local authorities, our departmental investigation committees, while members of the medical and veterinary professions are kept out, and are at the beck and call of men who practically know little of the subjects with which they are called to deal.

Under the licensing system, however, a good few experiments appear to be still in progress. This last year, 1887, it is stated that the total number under 64 licenses was 1,220, the number in which pain was unavoidably inflicted was 71, no anæsthetics being used, as tending to interfere with the result. Comparatively few vivisections properly so called were, however, practised—and in these antiseptic treatment to the wounds was generally adopted. In the future, as time mollifies the different opinions, I think we will find that vivisections will find their true level, and be only practised for good and wise ends, that cannot absolutely be attained otherwise.

Turning to practice, gentlemen, we find during the past few years many interesting events and changes have occurred. Some discoveries and new remedies have also been mooted. The more general adoption and use of the hypodermic syringe—the discontinuance in a great measure of bleeding—the non-blistering as a general rule in chest affections—the more general recognition of twist and displacement of the bowels, and of torsion of the uterus—the disappearance from our midst of Rinderpest and Foot and Mouth Disease—the rapid and alarming increase of Pleuro-pneumonia contagiosa during the last two years—the success of inoculation, and the adoption by Government of "Stamping-out"—the prevalence of Rabies at certain seasons, with Pasteur's process of cure—Tuberculosis, its widespread existence, and the attention which is now being paid to it—Actinomykosis, Azoturia, novel operations for Sidebone, Roaring, etc.—these and a host of others suggest themselves as topics on which much has been, and may yet be said. Societies such as this need not want subjects to discuss. We will, however, content ourselves with a few passing remarks on Pleuro-pneumonia and Tuberculosis as engaging much public interest.

Among those interested in the treatment and eradication of Pleuro-pneumonia we distinguish four classes:

1. Those in favour of "Stamping-out." Men who on the appearance of the disease—no matter how numerous the cattle or how valuable the stock—would within ten days slaughter every animal in any way exposed to the

contagion, as the only really effective measure for the eradication of the malady. These men at the present time have carried the day. They have matters very much their own way. The slaughter order is in force. The poleaxe is resounding on hundreds and thousands of heads. In the three weeks ending 21st April last, 943 healthy and 163 diseased animals were slaughtered in the United Kingdom; 1,100 in three weeks, about six healthy to one diseased, is a fair number. Some counties have plied the slaughter axe till their expenses reach £10,000 and £15,000. Let us hope that this drastic expensive measure may prove soon whether it is all that advocates so strenuously assert, for at best stamping-out for Pleuro-pneumonia in cattle is cruel, bloody, brutal work. To go into premises and slaughter a stock of 60 or 100 animals because two or three of their number are affected with Pleuro, and partly ruin in the case of a dairyman the owner's business for a month or two, is surely a very cruel proceeding, paying only too the bare price of the cows. Yet this has frequently happened, and will happen in stamping-out.

2. Those in favour of inoculation. Men who have heard of and seen its good effects, and experienced its benefits, men who have gone into the worst cases and outbreaks of the disease, and easily and without difficulty done away with it in a very short time, with little loss of animal life, at small cost to the ratepayers, and with but trifling inconvenience to the owners, and men who meeting with such satisfactory and successful results, see no good reason for the adoption of such a drastic cruel course as stamping-out in this disease.

3. Those who practise inoculation, and yet advocate stamping-out.

4. Those who can do without either inoculation or stamping-out, who hold the thermometer at a discount in Pleuro, who by the aid of their own unaided faculties can easily detect the disease, and by the slaughter of the first few cases put an end at once and always to its progress, men who from first to last have refused to examine and test inoculation, and ignorant even of its preliminaries, yet presume to pass an opinion on its merits, and jeer at its advocates.

The action of Government and the Privy Council in their dealings with inoculation is singular. They admit in the main its virtues, but they have always looked askance at and never recognised it. They have leaned to stamping-out, and ultimately adopted it. They have practically killed inoculation, and now with a "Jedder" sort of justice, they have appointed a Departmental Committee to inquire into its merits. They have practically put a stop to the work of the inoculators, and lately summoned a few of them at short notice, and without remuneration, before their Committee to give an account of it. "Hang inoculation first and try it afterwards" has been the motto of the Privy Council and their advisers. Those who have practised and are in favour of inoculation can, however, afford to smile at such treatment and submit to it with patience. They have the satisfaction of knowing that they have done good work, practising scientifically a most valuable process for the eradication and suppression of the most formidable and insidious of our bovine scourges—saving animals, saving money to the country, doing valuable services to their clients and districts, and gaining credit to themselves and their profession. Wide and severe as have been the ravages of Pleuro-pneumonia of late years, the effects, as has been truly said by Professor Williams, would have been tenfold worse but for inoculation. It is to be hoped that we will now have temporary, if not lasting immunity from it, but if the services of inoculators are ever again needed, I am certain that in the future as in the past they will be given cheerfully, ungrudgingly, for love of their profession and their patients.

It has been said that inoculation has been received with enthusiasm in

Scotland. The enthusiasm is easily explained. Pasteur's work has created the very greatest enthusiasm, and rightly, too, all over the world. He studied fermentation, and greatly improved the manufacture and preservation of beer, wine, and vinegar. He turned his attention to the silk-worm disease, put practically an end to it, and restored an almost lost industry to France. His researches in Splenic Fever, Swine Fever, and Rabies, and his grand systems of preventative inoculation, have been of incalculable benefit. He discovered the cause and pointed out the cure, the true and best application of science to practice. The man who discovers the microbe does well, but he who can stay the disease and do away with its effects does still better. So with the inoculation in question. Pleuro-pneumonia had long been the bugbear of our profession, the scourge and dread of the stock-owner and breeder. We could do but little for it, till the process of inoculation, as introduced here by Rutherford, changed completely the aspect of affairs. Now we care little or nothing for the disease, we can deal with our old enemy, and put him under foot. We know that inoculation will stay the progress of the disease and confer immunity from it. We can clear our districts, and as for those much talked of animals with patches remaining, producing, and spreading disease, we have not met with one. Our enthusiasm is justifiable and well-founded, and had inoculation been taken up all over the country with the enthusiasm it deserved, there would have been small occasion for the slaughter order and its concomitant, the poleaxe. By the lukewarm attitude of many of its members towards inoculation, the veterinary profession has lost, in our opinion, an opportunity of distinguishing itself that may not soon recur.

Tuberculosis—a disease much talked of at present, and likely to be the subject of eradicative legislation before long. It is well known, and has long been known to us all—too frequently we are called on to recognise it, in dairies, and on dairy-farms specially. We think it is on the increase among the Ayrshire breed, attacking many organs—serous membranes, lungs, liver, uterus, udder, the various glands, etc., and presenting many and various appearances, from the slight roughness and little millet-seed eminences on the surface of the membranes, to the excessively large calcareous indurations of the udder and glands, and the softening, breaking-up masses and abscesses in the substance of the lungs. A very loathsome disease in its advanced stages.

We all have our cases. Only last week we were called to a working-man's cow, and *post-mortem* examination showed disease of twelve months' standing, while the cow during ten months of that time had milked well, and the man's family and neighbours had regularly been supplied with the milk. The week before last we examined the carcass of another cow which had died, saving slaughter, and found an old case of at the very least two years' standing; and the cow had been a good milker, and been one of a dairy stock in full working order for the supply of fresh milk to customers. In April last, in slaughtering fourteen cows, in execution of the slaughter order, for contact with Pleuro-pneumonia, we found them all free from that disease, but four of them subjects of Tuberculosis, only one of them showing any sign when alive of the malady, while the worst case of the lot, a cow whose chest and abdomen was literally a mass of tubercular deposition, had apparently been well enough, and no suspicions were entertained of anything being amiss with her.

These cases—and they are but common cases to which any of you can furnish parallels—show the prevalence and insidious nature of the disease, and its importance in regard to our meat and milk supply.

In an advanced stage the appearances after death are so repulsive that we are all agreed that the carcass is unfit for human food, and should be

destroyed, but in the first stages, when only little pin-head-like miliary tubercles show on the pleura and peritoneum, and the flesh appears good and well-nourished, should the carcass be buried or consigned to the boilers? This question calls for attention.

Milk is one of the best media for the conveyance of the germs of disease, and the working-man's children and the dairyman's customers, in the cases we mentioned, were unwittingly and unintentionally, but not the less truly, supplied with it *ad libitum.* Will many cases of Tuberculosis follow? There are at least 300 dairies in Edinburgh and suburbs. Say there is one tubercular cow in each byre—an estimate far under the mark, we believe—that gives 300 affected subjects; and thus we have Edinburgh supplied with, and regularly supplied twice each day for years, with fresh milk (diluted, of course) from, to put it moderately, 100 tubercular cows. Will our medical friends kindly tell us whether the prevalence of Tuberculosis or the disease it simulates in their patients, Phthisis, is in anything like ratio to this number?

A butcher at an auction sale buys a big, fresh-looking animal, and on being slaughtered, the inspectors seize the carcass as unfit for food from Tuberculosis, by no means an uncommon case. Does not the man deserve, and should he not receive compensation? We think he should. An inspector under the Contagious Diseases (Animals) Act is called in, in terms of the Act, to a suspected animal, and diagnoses Tuberculosis in an advanced stage. Should he not have power through his local authority to slaughter that animal for the public weal, and advise moderate compensation to the owner?

Leaving the bigger and more important questions of meat and milk from tubercular subjects to the further investigation which it will soon apparently receive, we would simply say that the sooner a determined effort is made to root out Tuberculosis from our herds the better. The disease is hereditary—it appears on the increase—its loathsome character, and the possible danger, especially to young children, from it, all mark it as one with which the Government and the machinery of the Act should at once cope. For years and years veterinary surgeons and inspectors have urged that Tuberculosis should be scheduled under the Act, if not as a contagious disease—though we have seen it to all appearance contagious—then under some better name. Let this and kindred societies take the matter up, and aid and assist and co-operate with all favourable to this scheme. The Privy Council is long in moving, but always responds to persistent and well-grounded agitation, and let us hope that its response may be scheduling of Tuberculosis under a special slaughter-order, and its rapid decrease and extinction. Give the inspectors to the Privy Council and local authorities power to deal with the disease; in all deserving cases give moderate compensation, and root it out. A tubercular cow is no good to any one—an ultimate loss to her owner, generally an unhealthy, unthriving subject, and a danger to the community. The question of Tuberculosis is about the most important at the present time, and I would advise its discussion at an early date.

This question also leads to a consideration of our standing of veterinary inspectors under the Contagious Diseases (Animals) Act, but on it we have not time to enter. Veterinary inspectors in the past have done good service to Government and the country at large for very scant remuneration. What about the future? Should not our remuneration be increased? Should not veterinary surgeons enter largely into the composition of the local authorities in time coming? Are they not better qualified for the work than agriculturists and commissioners of supply? I leave the question with you.

Into veterinary politics, too, we will not enter, further than to say that great

changes have taken place during the last twenty years or so. The change of the mode of election of candidates for Council, the cessation of the Highland Society's examinations, and the easy admittance of its certificate holders to the Royal College of Veterinary Surgeons, the passing of the Veterinary Surgeons' Act, the erection of the new College buildings, etc. The latter we lately had the opportunity of seeing, and very pleasant and comfortable they appeared, the Council-room especially, with its stained glass windows, mostly contributed by veterinary medical societies, and imposing presidential chair. Already from their niches of fame look down really excellent portraits of Turner, Fitzwygram, Fleming, and Greaves, and when the other vacant places are filled the effect will be still more pleasing. We can imagine no higher honour for a staunch supporter and good worker in the cause of the Royal College than thus to be handed down to posterity in the former scene of his labours. To an old Highland Society man and Scotsman like myself, the pleasure, however, was not unalloyed. London centralization seemed to pervade the scene; not many Scottish practitioners nor men from the North will find their way there to take their proper part in the government and guidance of their profession—the men really cannot afford the time, to say nothing of the expense. As in the past, so in the future, Southern men will predominate in the Council-room and Examining Board of the Royal College of Veterinary Surgeons. Time was when there was some talk of a charter for Scotland, a Council and Examining Board for ourselves, but that time has passed away. Time was when some at least of the practitioners in Scotland were accounted not unworthy of being Examiners, but now-a-days matters are changed. The Examiners of the Royal College are appointed, we are told, on their merits, and not a practitioner in Scotland is accounted fit for a place on the practice tables, far better men hail from England. Botany, materia medica, and the A B C of anatomy only can safely be left to the poor dwellers in Scotland, and that only after they have passed that wonderful ordeal, the Fellowship Examination. At the present time Scottish practitioners are powerless to return one man by themselves to Council, while each examining term quite a host of men from England cross the Border to decide the fate of students taught at Scottish schools. When a Scotsman goes to England his mind and body, and perhaps purse expand, and he is soon well qualified for both Council and Examining Board, but the Scotsmen who stay at home, and quietly and honourably and without ostentation practise their profession, are rarely heard of.

What would the country think if all our Parliamentary boroughs, city divisions, and counties were done away with and the House of Commons filled by general plebiscite? How would the medical profession look if all the Scottish faculties were swept away and one huge Royal College of Physicians and Surgeons substituted, into whose council and examination boards medical men practising in Scotland were but sparingly admitted? Yet that is precisely the position of the veterinary surgeons in Scotland at the present time, and, strange to say, they seem perfectly pleased and satisfied with it. Will this state of matters continue, or will in the future a change for the better come over the spirit of the dream? We hope so.

The schools and students is an interesting subject, but we must forbear entering on it. In your name we think, however, we may convey most sincere congratulation of the fine buildings all of them now possess, the numerous and well-educated students, the higher standard of education and scientific and practical training sought to be attained, the high stamina of the teachers, and the general excellence of all the institutions. There is only one little drawback—the hooting, egg-throwing students are but recent creations; may their grievances be redressed and the race become extinct.

Veterinary literature for the last twenty years is a theme by itself, and can

boast now of not a few really most excellent standard works that redound to the credit of their authors and are an honour to the profession at large. Of other smaller productions, the less said the better. "A handy book for the farmer," "The Cow-calfer's Guide," "How to do without the veterinary surgeon," seems to be their motto. Another bird of doubtful plumage is the veterinary editor of the sporting or agricultural newspaper. Anybody can get his best advice for less than a penny. From such may our society be kept free. Relegate them to their journalistic friends, they are not wanted here. I trust I speak your sentiments.

And now, gentlemen, a very few words in closing on our society. In the words of our minutes, we understand it is to be and remain a practitioners' society, totally unconnected with any college or school. A society mainly for men in every-day practice, to whose meetings they may come three or four times a year and spend an hour or two with pleasure and profit; meetings which they must endeavour to render interesting by the introduction of unusual cases or specimens, at which they may ask and give advice, all on an equal footing, in whose discussions each and every member it is hoped will take a part, however short and small. To country practitioners especially, we know from personal experience a society of this kind is almost indispensable. Out in country districts, away from the centres of light and learning, we too soon get rusty and old-fashioned, and nothing tends more to rub off the rust and keep us abreast of the times than a really good society reunion and profitable conversation. After our recent unpleasant experiences, nothing short of our being convinced (speaking personally) of the absolute necessity of having a veterinary medical society would have induced us to again embark on the undertaking. We cannot do without a society, and the members have it in their hands to make of it what they will.

Over the entrance to our membership, gentlemen, I think we must watch, and watch carefully. Numbers don't make a society. Our old society's most profitable meetings were, we think, when our numbers were small. Numbers are certainly desirable, but I would rather have a society of twenty really good members, all on equal terms, taking part pleasantly in the discussions, than a society of a hundred with half-a-dozen speakers and the rest mere silent followers. To young men especially I would commend a society such as this, it is just what they need. It should improve them in every way, in public speaking, an accomplishment almost indispensable and of the very greatest value nowadays, in ideas and in practice.

The relation of this society to other societies should also not be lost sight of. Our relations with our friends in the West of Scotland and North of England, and to the National Society, have always been friendly. I trust such may be continued and increased. One desirable feature which I think we should strive after is to have now and again some really good men from a sister society to introduce a subject for discussion. Such a course brings new ideas and life and mutual benefit.

I fear the time has scarcely come when British Veterinary Medical Societies may shake hands and exchange ideas with their Continental confreres. But this, too, in time may come.

In the recent illness and deeply-lamented death of the late Emperor Frederick, we see how close, in times of peace, are the bonds of friendship and sympathy between ourselves and our Continental neighbours. How little, after all, divides us. A good and brave man passing slowly and undauntedly and nobly to his end affects us deeply; it is, as it were, one of our Royal Family, and of ourselves. And as we read of the course of the disease, the affection of the membranes—the necrosis and sloughing of cartilage——tracheotomy—the supposed fistula of the esophagus, the keen controversy as to the cancerous or non-cancerous nature of the disease, the pneumonia

and death, we could realise only too well the deep and fearful pain, so heroically borne, and sympathise with more than ordinary feeling. We too, gentlemen, can understand the rare skill and care which prolonged even such an illustrious life so long. We have not infrequently to perform tracheotomy, though in our patients the operation is simpler and easier; affections, too, of the larynx we have. Let us be thankful that necrosis and cancer of that organ are with us almost unknown.

I fear, gentlemen, I must apologise most sincerely for trespassing so long on your time, and will end by simply thanking you for so patiently listening to my disjointed remarks, and by wishing our new society every success. May it be a source of pleasure and benefit always to all its members.

Some discussion followed the reading of the paper, which was taken part in by Messrs. Borthwick, Thompson, Williams, and the Secretary. Subsequently, by invitation of the President, some interesting cases were brought forward, and some most interesting details of the "operation of castration of colts in the standing position" were given by Mr. Storrie, of East Linton, who had so operated on thirty colts this season, with the greatest ease and success.

A most instructive and pleasant meeting was brought to a close with a vote of thanks to the Chairman, after which several of the members took tea together.

Mr. Storrie, East Linton, introduces the subject of next meeting's discussion.

R. RUTHERFORD, F.R.C.V.S., *Hon. Sec.*

CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary general meeting was held at the First Avenue Hotel on June 5th, 1888; Mr. Rowe, vice-president, in the chair, and the following Fellows present: Messrs. Hall-Brown, Edgar, Herron, Hunting, Hurndall, Lowe, Oatway, Rogers, Samson, Shaw, Willis, Wragg, and the Secretary. Mr. Cassie, M.R.C.V.S., and Mr. Morgan Evans were present as visitors.

The CHAIRMAN exhibited the Ruptured Uterus of a bitch, having five distinct perforations.

Mr. HERRON brought forward some very interesting *post-mortem* specimens, consisting of Renal Calculi from two horses and a bull, and the bladder of a sheep showing a large amount of uremic deposit; he also showed a large Cystic Calculus taken from the carcase of a horse, and a fœtal calf in a mummified condition.

The SECRETARY showed the Os Suffraginis of a hack, which had been broken into fifty-four pieces.

Mr. HERRON then read a long and interesting paper upon the method of conducting *post-mortem* examinations, in which he alluded to the entire absence in London of facilities for making successful *post-mortems*, and pointed out the necessity for the veterinary profession taking some action in the matter. Under present circumstances, as soon as the carcase of a horse reached the knacker's yard its thoracic cavity was opened and the abdominal viscera were removed. This being done in the absence of the veterinary surgeon, how could he possibly in many cases give an accurate opinion as to the cause of death? To give a really reliable opinion, the organs should first be examined *in situ*, and then removed.

Mr. HERRON, after alluding to the importance of thoroughly examining the skin, visible mucous membranes, and other external portions of a carcase, directed his attention to the thoracic and abdominal viscera; to examine the latter set of organs he advised that after the removal of its skin the carcase should be placed in an upright position, and not laid on its back, as is usually done. He gave particulars of any easy method of removal of the brain,

alluded to the normal appearance and some of the abnormal conditions which may be found in the blood, the blood-vessels, and the serous membranes, and made special note of the position and appearance of the various viscera.

Mr. EDGAR found the difficulty in making *post-mortems* of the horse was due to the great size of the carcase; in his opinion, the upright position of the carcase was not practicable, and the abdominal viscera could not be examined so conveniently as when the horse lay on its side. In many instances of sudden death a microscopic examination of the blood was necessary, to determine the existence or non-existence of bacilli.

Mr. HURNDALL, while quite admitting the advantages to be derived from some such scheme for making *post-mortems* as the essayist had indicated, feared that the initial expense in such an undertaking would be too great. He quite agreed with Mr. Herron as to the advisability of examining the viscera *in situ*.

Mr. HUNTING feared we were all inclined to be somewhat superficial in our *post-mortem* examinations; he did not think the position of the carcase was of importance so long as the examination itself was thorough. The greatest difficulty he met with in *post-mortem* examinations was to decide how long existing disease had been present. A very frequent condition found was a purulent infiltration of a portion of the lung, with solidification of various densities and slight congestions. How could any attack of Congestion of the Lungs, no matter what its intensity, produce such changes in two or three weeks? In some cases of Congestion of the Lungs he found during the animal's life its breath stinking, and he observed a purulent condition of the lungs after death. All these cases that he had been able to trace occurred in horses that were known to have been previously affected with Congestion of the Lungs, but such conditions were always absent in a first attack.

There was also a difficulty in recognizing the existence or non-existence of Hypertrophy of the walls of the heart. Horses differed very much in size, and their hearts consequently differed. Mr. Hunting then alluded to the present system of making *post-mortems* of dogs supposed to have been affected with Rabies, and he pointed out the necessity of abstaining from smoking when examining the carcases of dogs, as tobacco-smoke obscures the odour of prussic acid and other drugs.

After some remarks from Mr. VILLAR,

Mr. SAMSON pointed out that the existence of foreign matter in a dog's stomach was not diagnostic of Rabies. He had found this condition in Gastritis. He also mentioned that in several cases of Farcy which he had examined he had found the lungs perfectly healthy.

Mr. ROWE considered the fact of our *post-mortems* being so often gratuitous was the reason they were not more thorough. He then alluded to Stringhalt, which disease had never been recognized *post-mortem*. He could not attribute Gastritis in dogs to the presence of mechanical agents in the stomach.

Mr. HERRON having replied, the proceedings were brought to a close with a unanimous vote of thanks to the essayist.

SIDNEY VILLAR, *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

THE summer meeting of this Association was held on July 4th, at the Albion Hotel, Leeds, the President, Mr. Philip Deighton, in the chair. The following members were present: Messrs. J. E. Scriven, T. Greaves, A. W. Briggs, A. W. Mason, W. Lodge, H. Cooper, P. E. Pickering, — Hanson, G. Whitehead, J. Clarkson, A. McCormick, G. E. Bowman, and the Secretary (Mr. F. Green-

halgh), Messrs. T. Hopkin, and T. Exley, M.R.C.V.S., Dr. Spencer (York), and Messrs. Robertson, Anderton, and Beauland were present as visitors.

Apologies for non-attendance were read from Professor Williams, Messrs. Dray, Scott, Snarry, Bale, Leather, Phillips (13 Hussars), Danby, G. Carter, and T. Briggs.

Mr. BRIGGS explained that his remarks made at York, in respect to Dr. Fleming and the VETERINARY JOURNAL, had been misconstrued. He maintained that on that occasion he never stated that in the matter of inoculation for distemper he had asked Dr. Fleming for his private opinion. What he did was to address an ordinary communication to the Journal named, which he expected, in the ordinary course of events, would have appeared in the correspondence at the end of the Journal, but Dr. Fleming saw fit to insert what he had written as an original article.

The minutes of the last meeting were confirmed.

A discussion arose as to the venu of the next meeting, and Mr. GREAVES proposed, and Mr. BOWMAN seconded, that the meeting be held in Leeds. Mr. Greaves stated that a few years ago the Society adopted the plan of having their meetings at various towns, but it proved a failure. They considered they were retrograding in numbers, and found they always had the best meetings in Leeds. The position became so serious that it was felt if the Society was to be kept on its legs at all they must stop at Leeds.

Mr. GREENHALGH moved that the next meeting be held at Bradford. He was still firmly of opinion that it was advisable, from various points of view, to hold their meetings in different towns in the county.

This was seconded by Mr. J. SCRIVEN.

On the motions being put, the voting was even; but the casting vote of the Chairman was given in favour of the Leeds meeting.

Mr. HANSON exhibited 22 stones that had come from a horse. The animal was purchased at last Fierby fair. He came to Hipperholme, and had been treated on seven or eight occasions for Colic successfully. On the last occasion, when he was seized, he came in the afternoon and was treated with the ordinary remedies. At night he passed several stones, and next morning no less than nineteen other stones, of various shapes and sizes, were found. That was about three months ago, and that horse had been at work ever since.

Mr. GREAVES said he was in the habit, when a horse was subject to gripes, of coming to the conclusion that there was some impediment in the alimentary canal. On several occasions he had found a stone in the rectum, and had managed to get hold of it and pull it away, thus saving several lives. The subject of inflammation of the bowels was an interesting one, and had been before them at Liverpool and Lincoln. He considered it was attributed to loss of nervous power in the bowels. His treatment was to give anti-spasmodic medicine—nitrous ether and such like. If the animal was not better in half an hour he repeated the dose, and if there was no change in an hour's time, he gave six drams of aloes. Professor Williams differed from him as to the administration of aloes. He (Mr. Greaves) was satisfied, however, that they could give aloes with impunity in cases of protracted abdominal pains, for in getting a passage through an animal they had a far better chance of saving his life.

Mr. PICKERING agreed with Mr. Greaves to a certain extent as to treatment, but thought in all cases of bowel affection, that diagnosis should be most carefully made. When he found a case of obstruction in the bowels, he considered there was nothing better than a dose of aloes, but where the pulse was 70 to 120, and the temperature 104°, he looked upon it as a case of inflammation of the bowels. In cases of inflammation, he invariably bled the animal, and found great benefit from it. If there was paralysis of the bowels, and the smaller vessels were ruptured, he thought that taking away

three to four or five quarts of blood was very serviceable. Where there was an obstruction of the bowels, pure and simple, he thought there was nothing so effectual as aloes and linseed oil, but he never gave more than five drams.

Mr. MASON, referring to physostigmia, expressed the opinion that they might just as well use water, and asked if any of those present had the record of a case where it had been of any good.

The PRESIDENT had the greatest faith in the administration of aloes. He had used physostigmia, but had no faith in it.

Mr. BOWMAN agreed with the aloes treatment, but considered it was very dangerous to use too much.

Mr. HOPKIN, speaking of physostigmia, assured the meeting that if they got the genuine article, they would observe an action in fifteen minutes. The evidence was pretty clear as to that, but if they wanted it right they must prepare it themselves, and it would act without a doubt. He remembered a case in which a horse had had no passage for two or three days, and in less than fifteen minutes after the administration it passed five or six lots of fæces. To say it did not act was to acknowledge to the world that they did not understand it, or had not had the right article.

Mr. GREAVES was pleased to hear what Mr. Hopkin had said, as his experience with physostigmia had not been very successful. It was evident they should prepare it themselves, and use it new, although he had heard of cases in which it had been used with success, months after it had been purchased.

Mr. HENRY E. SPENCER (President of the York Medical Society) then read the following paper on "Animal Parasites," with limelight illustrations:—

ANIMAL PARASITES.

By a parasitic animal, we understand one which inhabits the tissues or appendages of another, and derives its sustenance from the juices elaborated by its host. This definition must be understood as excepting the carnivora, which kill as well as eat their victims, and also embryos and nurslings, which conform to it as thus stated.

Parasitism, however, may be far from complete. The leech sucks the blood of its victims, but in the meantime pursues an independent existence; so do the flea and the mosquito. Some animals are only parasitic during part of their lives; in others, the female is parasitic and the male free. In some species one of the sexes is parasitic on the other. There is a curious family likeness amongst these creatures. The following points apply generally to all:—The digestive system is incomplete; the animal is furnished with suckers or hooklets to attach itself to its prey withal; the locomotive apparatus is rudimentary; and the reproductive organs are prominent and their function performed on an extensive scale. They are generally mean and contemptible-looking objects, and pale of colour. Many parasites convey to a zoological eye the impression of being degraded off-shoots of a higher class than that they now occupy. In all these respects there is a close and suggestive analogy between these creatures and those human beings to which their designation is figuratively applied. As the mammalian whale has got to look very like a fish from pursuit of the same mode of life, so has the high-born hag-fish got to look very like a tapeworm.

(A) PROTOZOA.

The lowest parasites in the animal scale are the *gregarinidæ*.

A gregarina is a simple cylindroid of protoplasm, without alimentary canal or other organs. It varies in size from a "pin's head" to half an inch lengthwise. It has a contractile envelope, but possesses no power of shoot-

ing out pseudopodia like its neighbour the amœba. It inhabits the earth-worm and the cockroach, gliding slowly about in their juices. Certain points in its life-history indicate that the gregarina is a degraded member of a somewhat higher family.

It becomes encysted, and the granular contents of the cyst become evolved into little boat-shaped cells, which subsequently escape from the cyst, and become indistinguishable from amœbæ, having like them the power of emitting locomotive and prehensile processes. Subsequently, when the adult type is reached, in some specimens, a crown of soft hook-like processes is noticed, a fact which points in the same direction. You see this in the figure on the left, in which also there appears to be a septum or diaphragm in the middle of the body, but this possibly merely indicates the fusion of two individuals. The next diagram shows it in the embryonic stage; the cyst with its molecular contents; the development of naviculæ; the same free; and the amœboid stage.

(B) Cœlenterata.

This sub-kingdom does not include any parasites proper, so far as I am aware, but many of its members exist in colonies, or are adherent to the shells or appendages of other animals. It is thus not uncommon to see a colony of sea-anemones riding on the back of a crab, and an even more comical sight has been witnessed—a crab clutching an anemone in each claw and carrying it about, the anemone sharing the food of its host and apparently using it as a cab. But in searching for true parasites, we pass on to the

(C) Annuloida,

which include the family, so important parasitically, and so interesting medically, the *Scolecida* or *Vermes*. The characteristics of this sub-kingdom are thus summarised by Nicholson:—"Integument soft and destitute of calcareous matter. Water-vascular system not assisting in locomotion. Nervous system consisting of one or two ganglia, not disposed in a radiating manner. Body of the adult sometimes flattened; sometimes rounded and worm-like." The sub-kingdom contains seven orders, of which five are parasitic—Tæniada (tape-worms), Trematoda (flukes), Acanthocephala (thorn-headed worms), Gordiacea (hair worms), and Nematoda (round worms).

Tape-worms, *Tæniada*, or *Cestoda*.—There are eight known varieties of this order, of which only two—tænia solium, and T. mediocanellata, are known in this country as human parasites. The following are the characters common to this order:—The head is provided with hooklets, or suckers, and produces by budding a succession of joints, each of which contains both male and female elements. If one of these segments be swallowed by an animal suited for its habitation, an embryo is set free, which bores its way by means of the flinty spines with which it is provided, into some solid part of the new host's body, where it becomes encysted and remains until one of two things happens—either it undergoes calcareous degeneration, or its host being swallowed by another animal, the former cycle is repeated. Generally speaking, the larval condition is passed in the body of a herbivorous, and the adult is that of a carnivorous animal.

I submit illustrations; the diagram shows the "head" of the worm—with profile view of the hooklets and suckers.

Tænia Solium—length 10 to 20 feet. The little head or scolex is furnished with four suckers and a double row of hooklets, and its larval form or cysticercus inhabits the muscles of the pig, causing the so-called Measles of that quadruped. I need hardly remark that it is from eating raw or imperfectly cooked pork that we obtain their well-known tapeworm.

T. MEDIOCANELLATA is both larger and longer, *i.e.*, its segments are more numerous than the last named; and its cysticercus inhabits the flesh of the ox. Here is a picture shewing the heart of a calf thus affected, which was at first erroneously described as suffering from Miliary Tuberculosis.

T. ELLIPTICA, about six inches in length, exists in cat and dog, and has been seen in the human intestine. The cysticercus has not yet been discovered.

T. FLAVOPUNCTATA, about 12 inches in length and having its joints marked by a yellow spot, has once been seen in man. Its larval form is also unknown as yet.

A little worm called TÆNIA NANA has been found in the duodenum in Egypt. Its length is about an inch, and its larva is not known.

T. ECHINOCOCCUS is more interesting. Adult, about a quarter of an inch in length, and consisting of not more than four segments, dwells in the intestine of the dog: but its larval form constitutes the well-known "hydatid" of man. The scolex is provided with suckers and hooklets, and the latter are familiar to most of us from the microscopic examination of the contents of cysts. I need not go into the clinical or pathological aspects of the question, but would note in passing that the great size which these developments attain is unique in the natural history of these larval forms of tapeworm.*

BOTHRIOCEPHALUS LATUS is the largest of the human tapeworms, attaining a length of over 8 yards. The club-shaped head is marked by a deep longitudinal sucker on each side. It is common in Russia, Sweden, and Switzerland, but is unknown in this country. The larva is not cystic, but is furnished with cilia and hooklets. Some authors say that it is free, swimming in water, and so communicated to man; but others say that it inhabits fishes and mollusks.†

B. CORDATUS, which inhabits the natives of Greenland. It is about a foot in length, and derives its names from its heart-shaped head. It also occurs in the intestines of the dog.

Trematoda (Flukes).—These creatures, also known as suctorial worms, are leaf-like in shape, and provided with one or more ventral suckers; they have a mouth and alimentary canal, but no anus. They are mostly hermaphrodite.

DISTOMA HEPATICUM, of which this is a diagram, has been found in the gall bladder and bile-ducts of man, but is better known in sheep, in which it causes the disease known as "Rot." The larva inhabits the slug.

The next picture is a very good representation of a small fluke, known only in Egypt—a country which seems to have preserved reminiscences of one of the ten plagues, as it is a mine of wealth to the helminthologist, and where indeed it seems rather "the thing" to have four or five species of entozoa and a few ectozoa to match in one's body, amongst the Fellaheen. Its length is about $\frac{1}{16}$ inch.

BILHARZIA HÆMATOBIA, leaf-like in embryo, is also met with in Egypt, at the Cape, and in Brazil. In the last-named country it is said that one-third of the whole population harbour it. The female is long and thin, the male short and thick. During copulation the lady is to be found as depicted in this diagram, grasped in the gynæcophoric canal of her spouse, whose marital relations are much more dignified, *e.g.*, than those of the *bonella*, whose males, diminutive and degenerate, do not abhor the womb of their mates, in which, according to Geddes and Van Beneden they take up a permanent abode as parasites.

This interesting creature, nearly an inch in length, occurs in the mesenteric vessels, intestines, kidneys, uterus, and bladder, causing dysentery or hæmaturia, according to its situation.

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* Frequency of hydatids in Iceland. † Uncooked fish.

Acanthocephala, or Thorn-headed Worms, are distinguished by an anterior protrusible proboscis, armed with recurved hooks, for attachment to the intestinal wall of the host. Amongst members of this order are ECHINORYNCHUS GIGAS, the embryo of which inhabits the larva of the cockchafer, and the adult the intestine of the pig, and E. ANGUSTATUS, whose embryo infests the interior of freshwater crustaceans, the adult the intestine of the cyprinoid fishes. Their life-history is similar to that of the tapeworm, including the burrowing and encysting in the tissues of the first host, and the complete sexual development in the second host which has eaten the other.

The *Gordiacea*, or Hair-worms, are parasitic on insects only. They attain considerable length, and in appearance curiously resemble an ordinary horsehair. They lead us to the next class.

Nematoda (Round Worms) are slender, not jointed, and possess mouth, alimentary canal, and anus. The sexes are distinct, and only part of their existence is passed in the parasitic state. The aspect of ASCARIS LUMBRICOIDES is familiar to all. I need only mention that it has three toothed papillæ about its mouth.

OXYURIS VERMICULARIS (Thread Worm) is on the right of this diagram.

TRICHINA SPIRALIS, length $\frac{1}{8}$ inch. Occurs in the human subject in two conditions—encysted and free. In the former state it has a more or less calcified capsule, and is situated between the sarcolemma. In this state it is harmless. In the free state it arises from eating underdone pork, the flesh of the pig being a favourite haunt of the trichina cyst. In the intestine the worm reaches sexual maturity, and the young worms on being set free penetrate into the tissues, causing the severe and often fatal disease—Trichinosis, or Trichiniasis, which has at times been mistaken both for Acute Rheumatism and Typhoid. The symptoms are, as you know, vomiting, diarrhœa, great depression of strength, pains in the limbs, rigidity of muscles, œdema of face and limbs, and general febrile symptoms, high temperature, thirst, quick pulse, etc. If recovery takes place, the worms assume the harmless encysted condition before described.

The GUINEA WORM (Filaria Dracunculus) is a tropical worm, the female of which is supposed to gain access to the tissues by perforating the feet of bathers in muddy tanks, of course in Egypt. One or more may exist at a time, and it may attain the length of six feet. After perforating, it remains for some months, gradually becoming more and more distended with young, and eventually makes its way to the surface, the point of exit being marked by a small blister. The natives extract it by winding it round and round on a stick, a practice in which some of them attain great dexterity, which, indeed, must be required, as the worm is extremely fragile (about $\frac{1}{10}$ inch thick).

TRICOCEPHALUS DISPAR, or Whip-worm, is an inch or two long, and is curious in the different size of its anterior one-third and posterior two-thirds. It inhabits the colon, but it is rarely met with in this country.

A large number of very interesting papers have been written about FILARIA SANGUINIS HOMINIS. The embryo was first discovered by Dr. T. R. Lewis, in India, in the blood, urine, and other liquids of persons suffering from Chyluria and Elephantiasis, probably caused by the mechanical occlusion of their lymphatics by these parasites. One may mention that there is a very good article on this interesting nematode by Dr. Lewis, in "Quain's Dictionary." The larvæ are said to be hatched in the stomach of the mosquito, which sucks them in with the blood of the patients. The length of the adult, according to Bancroft, is from three to four inches.

DOCHMIUS DUODENALIS, *alias* SCLEROSTOMA DUODENALE, is $\frac{1}{3}$ to $\frac{1}{2}$ inch in length. The male is recognisable by a crown of hooks at the caudal

extremity. By the hæmorrhages it excites, this worm causes the so-called Egyptian Chlorosis. It is also known in Brazil and in Italy, and made its first appearance in Switzerland amongst the workmen engaged in constructing the St. Gothard tunnel.

STRONGYLUS GIGAS is very common in the internal organs of many vertebrate animals, and may attain the length of several feet. It is rare in the human subject. The diagram shows one coiled within the kidney of a cat.

FILARIA LENTIS, from $\frac{3}{10}$ to $\frac{6}{10}$ inch in length, has been found in the human eye, and STRONGYLUS BRONCHIALIS, about the same size, in the bronchial glands.

(D) ANNULOSA.

The next diagram shows the nervous and alimentary system of the LEECH. I need not pause to dwell on the anatomy of this well-known creature; you will observe the præ-œsophageal ganglion, and the row of ocelli on the head; the twenty-three pairs of ganglia corresponding to the segments or zonites in one figure; and in the other, the anterior and posterior suckers; the sacculated alimentary canal, each saccule of which is distended with blood in turn till the animal is gorged and falls off, and the respiratory sacs at the sides. The *sanguisisuga medicinalis* has three serrated concentric jaws with which the well-known trilateral puncture is made. Most of the leeches are aquatic in their independent life; some are attached to water-plants and animals; one lives on the gills of crustaceans, another on those of the turbot, and others dwell on damp places on land. They belong to the class *Annelida.*

Many of the *Crustaceans* are parasitic. Specially well-known are the LERNEANS or FISH-LICE, which are good examples of the degenerative character of parasites, the males remaining free copepods, while the parasitic females have suctorial mouths, lancet-shaped mandibles, and atrophied feet. The diagram shows a similar organism (succuling).

The *Arachnida* furnish a very large number of ecto-parasites, of which I give a few illustrations, belonging to the Acarinidæ.

PENTASTOMA TÆNIOIDES inhabits the nose, frontal sinuses, and lungs of dogs, and other vertebrates, and presents a superficial likeness to the tapeworm, hence the term. The larvæ are found encysted in the liver and other organisms of various vertebrated animals, including man, and in them the two pairs of hooks seen in the adult are represented by two pairs of articulated limbs.

The SARCOPTES SCABIEI, of the same order, is familiar to us all. The two anterior limbs are furnished with suckers; the two posterior are similarly provided in the male, as seen in the diagram; in the female the posterior limbs, like the mouth, end in bristles. This creature is almost exactly like the cheesemite. Closely related to it is the harmless DEMODEX FOLLICULORUM, which exists in the sebaceous follicles of the human nose. It is said that few (if any) persons are exempt from it.

Amongst *Insects* ecto-parasites are very numerous, both on man and other animals.

Amongst the aptera are the many varieties of pediculi. The *Pediculidea*, which exist solely on man and in mammals, are furnished with suctorial mouths, and are much less active than the *Nirmidea*, which live only on birds and dogs. When the bird dies, the lice swarm near the beak and seem disquieted, being evidently anxious to change their abode. There are four species which infest man—P. corporis (of which I show a diagram), capitis, pubis, and tabescentium, the last named causing the skin disease Phthiriasis. The young of these loathsome creatures do not pass through a metamorphosis, but are merely small editions of the adult.

The higher aphaniptera pass through the common insect metamorphosis of

larva, pupa, and imago; possess in the last-mentioned stage, rudimentary wings, and have a suctorial mouth. This order comprises the common flea (*pulex irritans*), remarkable for the extraordinary strength of the muscles of its legs, which causes it to jump a distance, which is estimated, as compared with the human standard, to be equivalent to a leap of three miles; a property which, as most of us know, considerably enhances the excitement of the chase in the silent watches of the night. In the American tropics is a much more formidable flea, called the jigger (*pulex penetrans*). The male is free, but the female penetrates under the toe nail, which she uses as a lying-in hospital, becoming, as the diagram shows, a mere appendage to a bag of eggs. Some of the natives are dexterous in extracting them; but my friends Mr. Tippets and Mr. Hood inform me that amputation of the toe is a frequent operation in those latitudes in consequence of this parasite.

The order STREPSIPTERA includes an insect called STYLOPS, generally regarded as a degraded member of the higher coleoptera. It is parasitic on bees, and will be familiar to readers of the "Poet at the Breakfast Table." The female (diagram shows eggs in its inside) only is parasitic, as in the last case; it is a soft, worm-like grub, without feet or wings; the males are winged, free, and of very active habits.

Another insect may be named—the gadfly (œstrus equi), the larva of which is developed in the stomach of the horse. The adult being free. Amongst the

(E) MOLLUSCA,

the same remarks apply as in CŒLENTERATA.

(F) VERTEBRATA.

The only Vertebrate Parasites are certain fishes. The Fierasfer inhabits the sea-cucumber (Holuthurian), and I give an illustration of the Hag-fish, or MYXINA. The spinal column is represented by a notochord, and there is no trace of limbs or mandibles. Attached to the under surface of the rudimentary cranium is a strong recurved serrated fang; and it is also provided with suckers. It is thus able to attach itself to the alimentary canal of a larger fish, and to bore its way into its interior, where it pursues a parasitic existence.

Notwithstanding the fact that parasitic animals greatly outnumber non-parasitic, and that even their species are almost, if not quite, as numerous, the phenomena of Parasitism are usually regarded somehow as exceptions to the order of nature; and Professor Drummond speaks of them as a violation of the law of evolution. So far from this, they afford a powerful illustration of that law, and therefore of the fundamental unity of nature.

In the eloquent words of a great authority—Patrick Geddes—"The conditions of parasitic life are readily seen to differ from those of independent organisms in negative characters, *i.e.*, in the simplification of the factors of their environment. Let us, therefore, briefly consider the results of such simplification upon organisms in general. Let the mechanical conditions be simplified by the cessation of active movement; the specialised body-form necessary for locomotion becomes unnecessary; locomotor muscles and their skeletal attachments are simplified or disappear, organs of sense are far less needed, and nervous adaptations or structures become correspondingly reduced. In all these respects these sessile parasites simply agree with other sessile animals. Again, let us simplify the environment by the deprivation of light, eyes and pigment are useless, and our organism, whether cave-dwelling or crustacean, or internal parasite, become blanched and blind; and similarly with the other senses.

"Or let us subtract, as far as possible, the danger from other animals, by special protection or concealment in one of the nooks of life; here again,

for shelled mollusk, buried amphioxus—or hidden parasite—the diminished need of nervous adaptation is a similar degenerative factor.

"Let food become abundant, the same nervous economy follows. Let it be highly nutritive, and digestive structures and functions may be simplified. Thus the examples of progressive degeneration of the alimentary system, up to its complete replacement by superficial absorption—afforded by various parasitic species—are obvious enough.

"The soft integument, unprotected and blanched, the reduced muscular activities, the simple or absent alimentary tube, the reduced circulatory and respiratory organs, consequent on diminished waste and softened integument, are all intelligible enough; as also is the reproductive activity, demanded by increased risk of failure to find the appropriate conditions.

"The few *adaptive* conditions are readily understood. Given, the continuous adaptation of a flat muscular surface, to resist detachment from the host; and atmospheric pressure helps the development of the sucker. Given, either a clutching limb, or a portion of the body-wall thrust for support into the host—and the mechanical conditions aid the differentiation of the hook.

"Here, if anywhere, function may be said, in fact, to make the organ, and such curious resemblances in form as those between, say, a gregarine, a tape-worm, and an echinorynchus are not hard to explain."

The only other general point I need raise is as to the harm supposed to be done. While there can be no doubt as to the part played by such parasites as trichina, filaria sanguinis, and many others in causing much discomfort, disease, and even death, yet it would seem as if by far the large majority were absolutely innocuous. Wild animals harbour them much more than do tame ones, without apparent decrease of vigour; and in some races of men entozoa abound without exciting attention. Van Beneden goes so far as to suggest that they may even serve some beneficial purpose, by appropriating excessive nourishment or detritus, and speaking of the enormous fleas which exist on the shores of the Mediterranean, he whimsically observes, "If at some future day these insects were to be placed in the rank of surgical species, it would be necessary to resort to those shores in order to procure them; and we might suppose that, by judicious crossing, we might soon produce races that would be of real service; as yet, however, the therapeutic art has had recourse only to leeches."

The main conclusion is, that parasitic animals find conditions when, let us say by accident, they attach themselves to the exterior or interior of others, which make some of their pre-existing structures needless; and these become withered, useless, and ultimately even lost altogether; others require further development of those already existing, such as the locomotive apparatus of fleas; and others, again, the evolution of new ones for attachment and imbibition, such as you have seen depicted in so many of these diagrams. If those unaccustomed to the study of parasites marvel that they should still exist, and that even as a majority in animated nature, I can only say—that all these facts, firstly, usefulness impaired by circumstances or age; secondly, the apparent waste of life involved in the multitude of eggs laid, of which so few can ever reach mature life; thirdly, the exceptional good done, *e.g.*, by the leech as compared with the infinite injury done by the hydatid or the trichina, are, after all, only part of that "riddle of the painful earth," the solution of which has evaded the scientific use of the imagination since protoplasm became the physical basis of mind, and which, notwithstanding all advance in optical instruments, has not yet transcended the apostolic apophthegm, "For now we see through a glass darkly."

Mr. WHITEHEAD exhibited a very large testicle taken from a pig. It had undergone calcareous degeneration.

On the motion of Mr. HANSON, seconded by Mr. BRIGGS, Mr. Anderton, of

Halifax, was elected a member of the association, and on the proposition of Mr. SCRIVEN, Messrs Rickaby, of Guisborough, Mr. Scott, of Harrogate, and Mr. Best, of Thornton-le-Dale, were also elected.

Mr. BRIGGS remarked that if their York meeting was not the success it might have been, it had afforded them the presence of Dr. Spencer, who had just given them such a valuable lecture. (Hear, hear.) It was an embodiment of facts which none of them could for a moment doubt. Referring to the tape-worm of the dog he said he had seen some cases arising from a rough form of the echinococcus. He had noted some marvellous cases of this, and had at home splendid specimens of the stomach of a horse with no less than fifty or sixty bots attached to it, although it had been eight years in spirit. He had seen nematodes (oxyuria curvula) in an elephant. The animal belonged to a travelling showman who came to Halifax. The animal suffered very severely from Colic, and ultimately parted with a large pailful of this particular worm. He proposed a vote of thanks to Dr. Spencer for the very able paper that had been read.

Mr. GREAVES said he had felt great interest in the paper, and he was sure their thanks were due to Dr. Spencer for having come amongst them, and given them such an interesting exhibition of parasites; much of course of what they heard would not apply directly to their profession. As an old practitioner—it was forty-seven years since he was at college—he had to admit that at that time such things as parasites were not talked about. He hoped on some future occasion Dr. Spencer would endeavour to show them the different germs of disease. He believed the time would come when the germs of Cholera and of Glanders, and of the various infectious diseases of human beings and horses, would be, undoubtedly—that was, they would be shown, as they had had those shown them that afternoon, the difference between the germs that produced one disease and the germs that produced another. He believed it would ultimately be done so definitely that there could be no mistake about it. Science was encroaching upon it year by year. He referred to the valuable investigations of M. Pasteur, and believed the subject would be studied until the time would come when disease would be better understood than it was now. He seconded Mr. BRIGGS' proposition.

Mr. GREENHALGH was sorry Dr. Spencer had not touched on one parasite which was of such interest to man. He referred to the parasite of Anthrax. It interested veterinary surgeons more than medical men, although they found it in cases of wool-sorters' disease. He believed the echinococcus was more common in this country than was generally supposed. Three or four years ago he read a paper before that society on the echinococcus. It existed in the liver of a cow which weighed eleven stones, there being only about three pounds of real hepatic substance in the liver. There had been only one other case of echinococcus recorded in England, and that was thirty-four or thirty-five years ago in Cambridge.

Mr. PICKERING spoke of a case in which, on making a *post-mortem* examination of a yearling, he found in the large bowel quantities of Strongylus lumbricoides. Others were similarly affected, and he had them removed from the pasture and treated them successfully with half a pint of linseed oil, two drams of aloes, and oil of turpentine. He had no doubt in the former case death was caused by the parasites.

The vote of thanks was accorded unanimously, and Dr. SPENCER, in returning thanks, said if he had entered upon the discussion of Bacteria and Anthrax they would have been there far into the night. With regard to the echinococcus, the adult form was best known in the dog.

During the afternoon Mr. GREAVES thanked the members of the society for having returned him a member of the Council. The position he occupied in the election was a credit to himself and to them.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(*Continued from page* 54.)

MR. COE desired to know whether the essayist ever knew of a case of Anthrax in cattle from eating sewage herbage.

Mr. GREAVES said Mr. Carless had thrown out some ideas which might be carried a great deal further than that gentleman suggested, but the paper was one of thorough practical common-sense. It was quite true than when land was over-manured it produced an unwholesome herbage, and if they could only have the sewage conveyed to upper ground a great service would be done to the farmers and also to the general public.

Mr. OLVER observed that the subject was particularly interesting to him from the fact that he lived in a district which suffered as much from the ill-effects of sewage as any in England. The river was quite black, and after floods the adjacent lands were covered with sewage matter. He had been called in to several cases of what he believed to be poisoning from feeding on these grounds. The other day four cows died on one farm, where thirty are kept, from this cause, after a flush of rain, which flooded the fields and turned the grass of which the cows had eaten perfectly black. At the first Congress in London he expressed the opinion that sewage matter was a fruitful source of Tuberculosis, and he still entertained that view. Low-lying farms were particularly affected with this form of disease, and his experience went to show that the nearer one went to Birmingham the worse were the cases of Tuberculosis. Speaking as a member of a corporation most anxious to know how best to dispose of its sewage, he could say they found the matter a most difficult one. The Rochdale system was not in every respect a success; it required much attention and was very expensive, and there was great difficulty in disposing of the solid sewage. In his opinion they would never have a proper system till they adopted some chemical one. It was important they, as veterinary surgeons, should insist that this matter was very deleterious to live stock, and that they should agitate for some better method of sewage disposal, Much of the sewage of Birmingham was allowed to run into the river, without being treated at all, and probably that accounted for its blackness.

Mr. PARKER said he felt convinced at the time that many of the cattle which died during the year of the Plague were really affected with sewage poisoning, and he had seen no reason for altering his opinion.

Mr. STANLEY, as Veterinary Surgeon to the Birmingham Sewage Farm, declared that there had never been any disease amongst the large number of cattle kept on the irrigated land. The effluent was practically pure. In reply to a question by Mr. BLAKEWAY, he stated that the cattle drank from an independent water supply, and fed on the meadows irrigated by the sewage water after it had been treated.

Mr. OLVER: That is a different thing. What I refer to is sewage that has not been treated at all.

The HON. SEC. endorsed the remarks of Mr. Stanley as to the sewage farm, adding that healthier stock did not exist.

Mr. HUNTING thought that they had not at present any proof before the meeting that animals suffered from a definite disease at all. With the object of securing some definite result, he suggested that some animals should be subjected to experiments, simply to demonstrate whether the disease with the symptoms described by Mr. Carless could be produced. It was only to be expected that cattle in the suburbs of a large town should be less healthy than those in the country.

Mr. FAULKENER said it could not tend to help either human beings or animals to drink water containing quantities of organic matter or to drink even treated water.

Mr. BRIGGS gave cases of the disease described from his district, but said they had been attributed to the pollution of the river from dye works rather than to sewage matter.

Mr. TAYLOR deemed it the duty of the profession to point out to the public the grave danger which might arise from importing into a district large quantities of untreated sewage. He could bear testimony to the bad results produced in a dry summer from cattle drinking at a stream which received the entire sewage of a large institution. Mr. Carless was to be complimented not only upon the able manner in which he had introduced the discussion, but also on the courage he had exhibited in attacking one of the greatest evils of the present day.

The PRESIDENT coincided with the views generally expressed, and observed that, in a populous district where sewage was turned into the streams, one could hardly fail to come across cases such as those alluded to by Mr. Carless. In several instances he had known colts to waste away and die from the affection described, and he had never any hesitation as to the cause of death. He never saw Anthrax follow from sewage poisoning, but he could point to a farm where Tuberculosis existed in almost every animal that was killed, even the fowls being said by the farmer to be graped. A sewage tank capable of holding thousands of gallons on the farm had a pernicious effect upon everything, and he was inclined to think Anthrax might follow under such circumstances. He fully agreed that the chemical solution was the only true solution of the sewage difficulty, but he was inclined to think that these cases would not be so frequent if the sewage was utilised on the high land. The healthy condition of the Birmingham Corporation stock was probably due to the proper treatment of the sewage. Notwithstanding what Mr. Hunting said, he was bound to express the opinion that these cases were brought home.

At the close of the discussion, Mr. Carless was cordially thanked for his interesting paper, on the motion of the PRESIDENT, seconded by Mr. GREAVES.

A similar compliment was paid to the President, on the proposition of Mr. OLVER, seconded by Mr. HODGKINSON.

The members subsequently dined together.

The next quarterly meeting will be held at Derby.

HERTFORDSHIRE VETERINARY MEDICAL ASSOCIATION.

A NUMBER of members of the Royal College having expressed a desire to form a veterinary medical society for Hertfordshire and the adjoining counties, Mr. Kendall, Hitchin, sent a number of circulars to members, calling a meeting, which was duly held at the Sun Hotel, Hitchin, on June 22nd. There were present Messrs. W. Wilson, Leggett, Crofts, Kendall, Halliday, Mulvey, Wragg, Banham, Hunting, and MacGregor. Numerous letters of apology and good wishes were received from Sir F. Fitzwygram, Sir H. Simpson, Dr. Fleming, T. Briggs, T. Greaves, Professor Brown, T. Simpson, Professor Axe, Revell, Mills, Hewson, Lewis, etc. Mr. Banham took the chair, and in his remarks, said: "I promised Mr. Kendall that I should give him every support I could in the formation of a local veterinary medical society. I redeem my promise, believing that nothing is more beneficial to the profession than the meeting of members. It is a great mistake to narrow down our usefulness to mere individual action. We may be the most successful practitioners, and of great scientific merit and social position in the district in which we practise, and yet fall short of a higher standard so easily to be obtained by combined action. Of late years the profession has made

great progress in the eyes of the public. The State has acknowledged us in the prevention of contagious diseases of animals, also the farmer in the management of stock, and has sought our advice on the subject of hereditary diseases. I have often thought some original research might be undertaken by the profession. We have masters in the profession in every special branch, and not a few capable of scientific inquiry. What is wanted is opportunity and money, and why not the various associations subscribe and appoint workers, which result would be gratifying and would repay us. But this is not the only benefit we receive from the associations; they are invaluable to us as practitioners and workers. They dispel petty spite and prejudices by bringing us into contact with each other; ideas are exchanged, and we keep up with the progress of science. Isolation narrows our minds, and these societies stimulate a healthy state of the profession, and enable us to act with energy and precision. Other subjects I need not mention, but you will appreciate the value of societies in interesting ourselves in veterinary politics and ethics, and I beg to propose that a veterinary medical society be formed." This was seconded by Mr. Kendall, who mentioned over ninety members who resided in Bedfordshire, Cambridge, Essex, and Hertfordshire. The proposition was carried. It was decided that the society should be called the Hertfordshire Veterinary Medical Association. Rules were drawn up, and Mr. Wilson, Berkhampstead, was elected President; Messrs. Leggett, Croft, Harrison, Vice-Presidents; F. W. Kendall, Hon. Secretary. The next meeting will be held at Hatfield the second week in October.

F. W. KENDALL, *Hon. Secretary.*

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

MEETING at the Albion Hotel, Lincoln, June 28th, 1888. Present—Charles Hartley, Esq., President, in the chair; Messrs. W. H. Brooks, Fulbeck; W. B. Dickinson, Boston; B. Freer, Uppingham (Vice-President); F. L. Gooch, Stamford (Hon. Sec.); J. W. Gresswell, Peterboro; G. Osborn, Fulstow; Captain B. H. Russell, Grantham; Messrs. J. Smith, Huntingdon; T. Smith, Market Rasen; F. Spencer, Wragly; F. W. Wragg, London; T. Greaves, Manchester; G. A. Banham, Cambridge; T. A. Rudkin, Grantham; and Thelin, Manchester (Visitor).

Mr. T. A. Rudkin was elected a member. Letters of apology for absence were read from Professors Axe, Williams, Pritchard, Dr. Fleming, Messrs. Howse, Clark, etc.

The PRESIDENT delivered his inaugural address, in which he said: I sincerely thank you for the honour you have conferred upon me by my election to the office of president of this society. I can assure you I fully appreciate your kindness in paying me this, the highest compliment in your power, and I shall do my best to prove that your confidence is not misplaced. You will readily understand the feeling of diffidence which I felt as to accepting office in succession to our valued Ex-President, Mr. Greaves, whose energy and devotion to our profession are only equalled by his courtesy and amiability of character. His interest in our comparatively young association is unfailing, and furnishes an example to us all. It is my impression that associations such as this, like matters commercial and political, vary considerably, having times of depression or prosperity; times when there are general activity and interest; others when we have only small attendances at meetings, and when the benefit to be derived from our papers and discussions do not appear to be appreciated. The latter I fear you will agree with me has been our condition for some time, and I would urge upon you, gentlemen, the necessity of improving this condition of affairs by every means in our power. We may endeavour to increase our numbers by bringing before you any professional brethren who may not

already be members the many advantages that accrue from the realization of our motto, "Unity is strength." We may aid our Secretary by preparing papers which will increase our store of knowledge and furnish ground for friendly interchange of ideas; and we may endeavour to attend all our meetings, and so assist each other. Much useful information must have been acquired by those members who have attended regularly, not only from the thoughtful, scientific, and practical papers on various subjects which have been read, but from the discussions which they have led up to, and personally I may say that I have materially benefited by them. I do not propose to trespass long upon your time, knowing that the paper awaiting your consideration from the pen of Mr. Smith will be much more worthy of your attention, but I should like to mention two or three matters of interest to us all. First, I must express the feeling of disappointment which you will, I am sure, share with me as to the non-election of our nominee Captain Russell to a seat on the Council. We have had ample experience of his sterling worth and fitness for office as our representative, and I am confident it is by the election of such men that the interests of provincial veterinary surgeons will be best promoted. At the same time I desire to congratulate Mr. Greaves on his re-election; he is a man we could ill spare. On the subject of the proposed Horse Tax you will feel with me that we are entitled to exemption for all animals used for our professional work. Every effort must be made to gain this, and we must be prepared to join any movement that may be made in this direction. With reference to the question of Students *v.* Examiners, which caused such a commotion some time ago, I regret that such an event should have occurred. The details are only too well known to you. We must be most careful to do our utmost to guard against any injustice being done to students (and examinations at the best are but an approximate test of a man's knowledge), but at any cost we must maintain the dignity and integrity of our diploma-granting body, the Royal College of Veterinary Surgeons. You will have noticed in the daily paper of a recent date a letter from an army veterinary surgeon describing an operation for the relief of "roaring" suggested by Dr. Fleming. This, if successful, would be a magnificent thing for our profession, but from my experience of somewhat similar cases, the healing process obliterates the good that is apparent immediately after the operation, and I am afraid that until the cause of the disease is perfectly clear to us, the remedy will be undiscoverable. I will close by expressing my sincere sorrow for the death of my old preceptor, Professor Robertson. I was intimately acquainted with him, and gladly take the opportunity of acknowledging the many kindnesses I have received from him. I remained at the College doing clinical work with him the whole of one long vacation, and know what a kind, earnest man he was. I can never forget the opportunities he gave me of improving myself. His sad and sudden death must have been a painful shock to all who had known him, and an almost irreparable loss to the profession.

Mr. GRESSWELL urged with regard to the horse-tax, that veterinary surgeons ought to be exempt as well as medical practitioners. He proposed, "That the Secretary write to the Chancellor of the Exchequer claiming exemption."

Mr. GREAVES seconded.

Mr. GOOCH said, "that the Chancellor of the Exchequer had received a deputation on the subject, and had promised to give the matter his best consideration."

Mr. BANHAM "thought that combined action should be taken, with the other societies, through the Council of the Royal College of Veterinary Surgeons. The Chancellor of the Exchequer would pay more regard to a

memorial signed by 200 or 300 individuals than to one signed by a few." He proposed, as an amendment, "That the Secretary write to other societies, in order to ascertain their views on the subject."

Mr. GREAVES said, "that the Council of the Royal College of Veterinary Surgeons had taken action so far as they were concerned, and he thought nothing would be lost by the different associations acting on their own responsibility."

The motion having been negatived, it was resolved, on the proposition of Mr. Greaves, seconded by Mr. Brooks, "That in the opinion of this meeting veterinary surgeons should not be subject to the horse-tax, but should be placed on the same footing as medical men with reference thereto." Also, "That the Hon. Secretary write to Lieut.-General Sir Frederick Fitzwygram asking his advice on the matter, and that the President and Secretary be empowered to take such steps as they may think fit, in order to obtain exemption from the tax."

Mr. J. SMITH, M.R.C.V.S., Huntingdon, read the following paper on

"COLIC IN HORSES."

MR. PRESIDENT AND GENTLEMEN,—Knowing that I should be unable to introduce to your notice anything of novel importance, I have selected this subject for my paper with the hope that whatever it may lack in interest, may be atoned for by a good discussion, from which we may all derive some information that may be of use to us in our every-day practice. I do not propose to occupy your time with a definition or with a list of the symptoms of the disorder, with which you are all familiar, but to confine myself more to its causes, prevention, and treatment. All horses intrusted to our care are more or less liable to Colic, but we find that cases are rare in proportion to the care bestowed upon their treatment in regard to their work and diet. And this is the reason why the heavier breeds are more liable to this affection. They are generally supplied with a large quantity of food, frequently of inferior quality, which is often given to the horse when he is exhausted with prolonged labour. A horse is worked for several hours at a time, and when brought home has his manger filled with bulky and indigestible food. This he often eats ravenously, and the imperfectly masticated food is passed into the stomach and intestines whose vital energy has been so much impaired that instead of being digested and prepared for assimilation it acts as an irritant, and also, by undergoing chemical changes, generates gases which distend the stomach and bowels, and we get a case of spasmodic or tympanitic Colic, or more probably a combination of the two. We are aware that a large quantity of even good food given to healthy horses will sometimes cause disturbance, and how much more likely will such be the case in the instance I have quoted. In addition to this very frequent cause of Colic, we have the system of occasionally giving cooked food to horses, and that again in large quantities at a time. We know that amongst a number of horses there are generally some which are greedy feeders, horses which bolt their food, and we find that these, when fed upon cooked food, are very prone to Colic. In fact, we should be surprised if they were not, when we know that in these cases the starchy constituents of the food are passed directly into the stomach without being acted upon by the saliva, and arrive there in the best possible condition to undergo fermentation. Again, how often in large towns do we get cases of Colic on a Sunday morning? On that day the horses are resting, and of course must have a bran mash. And what a bran mash it is as a rule! Sufficient for at least three or four horses. The horse eats greedily of his changed diet, and Colic is a result. I would not for a moment lead you to understand that I object to mashes as an alternative, but what I do object to is the quantity in which they are given.

Another error in dieting is very common. A horse has done a harder day's work than usual, and for this reason must have more food. But this is not given as an extra feed. The ordinary feed is doubled in quantity, and very often given to a tired horse at a time when of all others food should be withheld. Again, a sufficient supply of pure water is necessary for the maintenance of good health, if frequently and regularly given. But how often do we see horses come in from a hard day's work nearly exhausted and perspiring freely, and allowed to drink their fill of cold water! That this is a fruitful cause of Colic I have no doubt, and I believe that horses in large towns which have access to public troughs are largely saved from Colic from this cause, by being allowed to drink frequently, when the horse himself becomes a good judge of the quantity he requires. At this season of the year we meet with several cases of Colic as the result of allowing horses an excess of green food, which from its succulent nature is especially liable to undergo fermentation. It is by appreciating the causes of the disorder that we are led to be able to give advice for its prevention, and to this part of my subject I wish to devote a few words, as I am of opinion that in no class of diseases have we the causes more under our control than in stomach and bowel affections. Prevention of Colic will be largely obtained by avoidance of errors in dieting, to some of which I have referred. I would recommend that those who have charge of our horses, especially our agricultural horses, be taught that the stomach of a horse is not like the rumen of a cow, a mere receptable for food, but an essential organ of digestion of but limited capacity, which does not need to be crammed in order to perform its proper functions, and that it cannot be so treated without danger to the animal; that the teeth of a horse are provided for the purpose of masticating the food, and that food which does not require mastication should be sparingly, if ever, used. I would further recommend that no horse be put to work immediately after a full meal, and where a horse has done a heavy day's work, he should be allowed to stand in the stable until he is cool and comfortable before being fed. A little chilled water may be given, and if a little good hay be put into the rack, it will occupy his attention and besides requiring proper mastication, will further have the effect of slightly stimulating the stomach to secretion and prepare it for the reception of the feed which is to follow. Should a horse require more food than usual to supply the extra waste of tissues caused by hard work, let him have it by all means, but let it be in excess in its albumenoid or nutritious constituents, and let him be fed oftener, and not in increased quantities at a time. Again, the more prominent ideas which strike me in connection with the prevention of Colic. In the treatment of Colic I am in the habit of making a secondary consideration of the old adage, *causa sublata tollitur effectus.* Our first and chief endeavour must be to relieve the pain. This once accomplished, we are on the high road to a successful termination. Many and varied are the drugs in our hands for securing this object, but in my own experience I have found nothing to equal the subcutaneous injection of morphia. I know that by some this remedy has been condemned, but I attribute this largely to want of judgment in using it, especially as to the quantity given and the repetition of the dose. It is so easily administered and its action is so rapid that I consider its discovery to be one of the greatest boons ever conferred upon veterinary surgeons. Many times have I seen a horse suffering acutely, and, after he has had one or more of the ordinary colic drinks poured down his throat, relieved in a few minutes by its use. In large and repeated doses it is sure to cause delirium, but in doses of 40 minims it will be found to possess all the advantages I claim for it. Should the morphia fail to relieve the pain, I should not repeat the dose under four or five hours, but should resort to some other remedy, and next to this I am inclined to rank chloral hydrate. By using this drug we get all

the good effects of opium without any deleterious results. In doses of from 2 drams to ½ oz., I consider it a splendid remedy. Opium has been largely used for years in the treatment of abdominal pain, but for my own part I seldom use it in cases of Colic, as it is liable to interfere with the action of the bowels, and if freely used will cause delirium, besides leaving the horse very seedy after the pain has left him. Belladonna, given in the form of the extract, is a very good anti-spasmodic, and I frequently use it both in this form and as the subcutaneous injection of atropia. When given as a drench it may with advantage be mixed with about 2 ozs. of chloric or sulphuric ether, the latter being good stimulants as well as anti-spasmodics. The extract of belladonna may also be used with benefit, if given as an enema, with a little warm water. When exhibited thus it has the effect of lessening the contraction of the muscular coats of the bowels, and so allowing the expulsion of fœces and flatus. Of aconite as an anodyne I have had little experience; but what I have had has led me to look upon it as a dangerous remedy, especially in cases of tympanitic Colic when given with an alkali. In chlorodyne we have a combination of excellent medicines, and one dose of this is generally sufficient to relieve an ordinary case of Colic. Indian hemp is a drug I am not familiar with, but if it possess the properties claimed for it, I hope it will soon be in the hands of all of us. In cases of flatulent Colic, especially in cart-horses, I have found the oil of turpentine given in linseed-oil an excellent draught. In protracted cases this may be repeated with an admixture of a solution of ammonia or carbonate of ammonia. There is a great diversity of opinion as to the advisability of giving aloes in these cases. For my own part, whenever practicable I give a ball containing five or six drams of aloes, as soon as possible, but under no condition do I repeat the dose, as I have found that if you are master of the pain, the action of the bowels is only a matter of time. As for surgical interference in these cases, in tympanitic Colic, where there is great distress in breathing and oppressed heart's action, as evidenced by dusky mucous membranes, etc., I very strongly recommend benesection. In two urgent cases of flatulent Colic I have punctured the intestines through the abdominal walls with good results, in another case the horse died, but he was *in extremis* when I operated. Were we to go further than this and the case died, I think the next time the owner required the services of a veterinary surgeon he would go elsewhere. Exploration per rectum I believe to be of great service in assisting us to diagnose the cause which is producing the pain, and always have recourse to it. If constipation exists frequent enemata of warm water may be given, and this may be varied in obstinate cases with linseed-oil. Of ætherisation per rectum I have had no experience, but hope some of the gentlemen present have, as it seems to me that it should prove a valuable agent in reducing the contraction of the bowels. In all severe cases of abdominal pain much good may be obtained by the continued application of hot rags to the abdomen, and this is a measure I never neglect. As for the general surroundings of the patient, I like to see the animal at once placed in a roomy loose-box, and unless he be very violent, although I may be wrong, I allow him to get up and lie down as he pleases. In the opinion of some this may be courting the serious complication of twisted bowel, but it is my opinion that twists from this cause are extremely rare, but arise generally from muscular contraction, especially when the bowels are tympanitic. It has been a common error to suppose that in many of the more severe cases of Colic we have had to deal with inflammation of the bowels, whereas I believe that not in one case in a thousand do we get this as a sequence to pure Colic, Enteritis being a rare and extremely fatal disease. I will now conclude my remarks by renewing the hope expressed in the early part of my paper, that a good discussion may follow.

A long and practical discussion followed, in which the President, Captain Russell, Messrs. Wragg, Greaves, Banham, Gooch, Dickinson, Freer, Gresswell, and others took part.

On the motion of Mr. Gooch, seconded by Mr. Wragg, a hearty vote of anks was passed to Mr. Smith for the paper.

In the course of the discussion, Captain Russell took the opportunity of returning his thanks to those members who gave him their vote towards obtaining a seat on the Council. Whether his reasons for thinking why he was not elected were right or not it was impossible to say, but he had a grave suspicion that the pledge entered into by this Association with others a few years ago had not been acted up to as it should have been.

The PRESIDENT said with regard to their next place of meeting, he had a half-promise from Professor Axe that he would come amongst them. It was therefore desirable that they should meet at some place on the main line, and he had pleasure in proposing that their next meeting be at Huntingdon. This was agreed to.

Mr. GOOCH exhibited two calves that were in the uterus of the cow at least a year and eleven months.

The PRESIDENT showed an ingenious portable firing-iron.

Mr. GREAVES proposed a vote of thanks to the President for the able address he had given them, and for the admirable manner in which he had conducted that meeting. He hoped the members would rally round him and give him all the support they could during his year of office.

Captain RUSSELL had great pleasure in seconding the proposition. He was pleased indeed to see Mr. Hartley in the position of Chairman of the Association; he had known him for some time, and he was sure he would make a very useful President.

Mr. GOOCH supported the motion, and invited members who desired to read a paper at the next meeting to give him due notice.

The motion was carried by acclamation.

The PRESIDENT returned his sincere thanks for the compliment which had been paid him.

The members afterwards dined together.

ROYAL AGRICULTURAL SOCIETY.

AT the monthly meeting, held on June 27th, Sir JOHN THOROLD (chairman) stated that Professor Brown had presented the following report:—

PLEURO-PNEUMONIA.—The last report presented to the Committee was up to May 26th. Since that date the following outbreaks of this disease have been reported—viz., twenty-four in England and sixteen in Scotland. Sixty-one diseased and 262 healthy cattle have been slaughtered in England, and thirty-seven diseased and ninety-eight healthy in Scotland. The Slaughter Order is now being carried into effect throughout Great Britain and Ireland.

SWINE FEVER.—In the three weeks ended June 16th there were 572 outbreaks reported, and 2,961 swine attacked with this disease. Of these, 1,452 were slaughtered, 1,217 died, and 129 recovered; the remaining swine were left alive by the local authorities.

ANTHRAX.—Seven outbreaks of this disease have been reported and nine animals have died.

The Committee recommended that Mr. Frank H. Gibbings be appointed Provincial Veterinary Surgeon for the county of Nottingham, in the room of Mr. Charles Gresswell resigned. A letter had been received from the Clerk of the Farriers' Company announcing that at a meeting of the Court, held on the 25th instant, it was unanimously agreed to present the Freedom of the Company, free of cost, to the two persons whom the Council should notify to

the Company were the first-prize takers at the competition of shoeing smiths to be held at Nottingham next month. The Committee recommended that this offer be accepted, and that the thanks of the Council be conveyed to the Farriers' Company for their action in the matter. In response to the invitation of the Council, the President of the Royal College of Veterinary Surgeons had consented to serve on the Veterinary Committee of the Society.

Professor BROWN reminded the Council that at a recent meeting, when the subject of inoculation, particularly in connection with Swine Fever and Black-leg was discussed, Earl Spencer had urged that something should be done by way of application to the Home Office to carry on experiments in regard to Swine Fever. He (Professor Brown) had promised to make an application at once, and accordingly had a letter prepared, stating that a strong feeling had been expressed by this Society in regard to continuing these experiments, and asking whether the Home Secretary was of opinion that licences could be granted to certain veterinary surgeons selected by him without the necessity of the filling up of and obtaining signatures to the usual forms, which would be absolutely fatal to the conduct of the experiments. In reply to that letter his Department had received the following communication from the Home Office :—

Whitehall, June 19th, 1888.

SIR,—I am directed by the Secretary of State to acknowledge the receipt of your letter of the 12th inst., intimating that a strong desire has been expressed by the Council of the Royal Agricultural Society of England that a certain number of veterinary surgeons selected by the professional officer attached to the Agricultural Department of the Privy Council Office should receive licences under the Act 39 and 40 Vict. cap. 77, empowering them to inoculate living animals with the virus of Swine Fever for the purpose of protecting the animals from that disease, and inquiring whether, in the opinion of Mr. Secretary Matthews, it would be possible to grant licences forthwith to these professional men without the trouble and delay which are incurred in filling up and obtaining signatures to the usual forms; and, in reply, I am to acquaint you, for the information of the Lords of the Council, that the proposed inoculation to be made for the protection of the particular animals inoculated would not be such experiments as the statute forbids to be performed without a licence.—I am, etc., (Signed) E. LEIGH PEMBERTON.

The Clerk of the Council, Agricultural Department,
Privy Council Office.

He understood the letter to mean that inoculation performed for the purpose of protecting the animal was not an experiment within the meaning of the Act. The Home Secretary had said that that was his opinion on the matter, but he (Professor Brown) would point out that only the opinion of the judge who might try a case would be valid as a legal interpretation of the Act. He could not get rid of the fact that the word "experiment" stood in the Act of 1876 without any attempt at definition.

Colonel KINGSCOTE remarked that they did not seem to have got any further than when they went to the Lord President some months ago.

Mr. DENT said, as he had before stated, the right way was for Professor Brown or some one appointed by him, to perform these operations, and that if nobody else would take the risk of fighting the battle, the Society should do so. What was the object of their existence as the Council of the Royal Agricultural Society? It was to try to find out anything that would be of advantage to the agricultural interests of this country. In the event of a prosecution, he would be quite willing to move that a grant be made towards the expenses of fighting the battle.

The subject then dropped.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

FELLOWSHIP.

THE following gentlemen, having passed the prescribed examination, were admitted Fellows on July 13th :—

Mr. J. H. Steel	Army Veterinary Department.
„ J. B. Gresswell	Louth.
„ C. J. Humphrey	London.
„ F. P. Carter	Bradford.
„ J. Leather	Liverpool.
„ T. H. Slocock	Hounslow.
„ R. J. Hickes	Market Weighton.
„ J. Cooke	Scarborough.
„ W. Peddie	Glasgow.

MEMBERSHIP.

At a meeting of the Court of Examiners, held in London on and between June 26th and 28th, 1888, the following from the Royal Veterinary College passed their Oral and Practical Examinations, and were admitted members of the profession :—

Mr. F. W. Melhuish	Exeter.
„ J. M. Tebbot	Kettering
„ R. C. Tennant	Bedford.
„ J. E. Taylor	Derby.
„ T. McGuinness	Dublin.
„ G. D. Lausley	London.
„ J. R. Welsby	West Derby.
„ F. O. L. Walpole	Bury St. Edmunds.
„ C. E. Doyle	London.
„ C. N. Parsons	W. Dulwich.
„ D. B. Miller	Virginia, U.S.A.
„ J. Sherley	Twickenham.
„ W. W. Norwood	Doncaster.
„ F. W. Willett.	Staines.

The following students passed their Second Examination :—

Mr. F. W. Wildgoose.	*Mr. G. Bishop.
„ G. D. Tinkler.	„ E. C. Storey.
„ A. S. Trydell.	„ J. E. Abbott.
„ C. Nesling.	„ R. Halpin.
„ J. N. Booth.	„ W. A. Welch.
„ G. T. Cannon.	„ C. H. Williams.

The following students passed their First Examination :—

Mr. J. B. Tutt.	Mr. M. A. Hutchence.
„ H. A. Pattison.	† „ J. Row.
„ A. Brown.	* „ F. M. Hill.
„ S. Bennett.	„ H. Garry.
„ E. H. Simmons.	„ G. A. Bushman.
„ F. E. H. Baldrey.	„ F. H. R. Bunbury.
„ H. Sharpen.	„ A. Smith.
„ R. Forshaw.	„ F. F. Spencer.
„ L. H. O. Johnes.	„ F. Gregory.
* „ F. L. Somerset.	„ F. E. Place.
„ E. W. Borett.	„ W. H. Williamson.

Mr. D. G. Davies.
„ E. Morgan.
„ C. Harwood.
„ J. E. Shacklock.
*Mr. C. H. Coody.
„ W. F. Howes.
„ P. C. Woolston.
* „ D. Pugh.
Mr. A. Wall.

Marked thus * passed Great Credit.
Marked thus † passed Very Great Credit.

ARTHUR W. HILL, *Secretary.*

Army Veterinary Department.

Gazette, June 26th.

Veterinary Surgeon J. W. A. Morgan, to be Veterinary Surgeon First Class.

Gazette, July 10th.

Veterinary Surgeon W. D. Gunn, to be retired from the service, receiving a gratuity. Dated 13th July.

Gazette, July 17th.

The following gentlemen to be veterinary surgeons on probation :—F. B. Drage, vice H. A. Fallam, deceased ; J. H. Jackson, vice W. D. Gunn, retired.

J. H. Steel has arrived in England from India on six months' sick leave.

Obituary.

The following deaths have been reported :—F. Watkins, M.R.C.V.S., Mareham-le-fen, a graduate of 1868 ; and H. J. Hunt, M.R.C.V.S., Newbury, who graduated in 1880.

Notes and News.

DOGS IN CHINA.—They have a very efficient way in North China of preventing dogs from becoming too numerous. They strangle them, eat the carcass, and sell the skin. No knife is used in the work of destruction, for that would injure the fur. The exportation of dog skins is an important item in Chinese commerce.

GLANDERS IN THE UNITED STATES.—Glanders appears to be very prevalent in some parts of the United States. In Illinois many horses have had to be destroyed, and at Tuscola a man contracted the disease. In Kansas City, a man has died from Glanders. He was in the habit of doctoring glandered horses, and in doing so blew salts from his mouth into the animals' nostrils.

ROYAL VETERINARY COLLEGE.—The friends of Professor McQueen, late of the Glasgow Veterinary College, will be gratified to hear that he has been appointed teacher in the Royal Veterinary College, London, where no doubt his zeal, ability, assiduity, and courteousness will soon establish for him a favourable position among his colleagues and the students.

M. PASTEUR AND THE AUSTRALIAN RABBITS.—A correspondent sends us the following extract from a letter received from New Zealand :—Popular prejudice is said to be against M. Pasteur's microbe theory ; it may not be generally known how much popular superstition has lately done for him out here. When this anagram—

Pasteur's vast breed of microbes
Removes a cursed pest of rabbits—

was discovered by a well-known citizen of Christchurch, New Zealand, and

published by him in the *Weekly Press*, many of the farmers recognised in it the finger of Providence, and believed a sign had been vouchsafed to them.

Unique Case of Early Lactation.—On the 19th May last the Clydesdale mare, "Moss Rose," the property of John Gilmour, Montrave, gave birth to a well-grown, good-conditioned filly foal, which was at once noticed to have mammary glands, each the size of an ostrich egg, and to have perfectly-formed teats, which were easily grasped, and when drawn gave milk in abundance. The glands were emptied, and astringents applied to stop the secretion as soon as possible, which treatment was quite successful in ten days. Unfortunately, the foal afterwards took "Joint-ill," and though everything was tried to cure it, it died when twenty days old. It would be interesting to know if this condition has been often noticed, and also if any reasons can be given for it.

Correspondence.

TUSON'S DISINFECTANTS.

Sir,—In the June number of your Journal, Mr. W. Alston Edgar, F.R.C.V.S., refers at pages 416 and 417 in very complimentary terms to my disinfectant preparation of chloride of zinc and sulphurous acid, under the name of "Sporokton," as a reliable agent in the treatment of skin diseases.

Kindly allow me to point out, however, that I have long since abandoned the title "Sporokton," and that my various preparations—liquid and powder—are now called "Professor Tuson's Disinfectants." The agent referred to by Mr. Edgar is No. 1 Liquid. By publishing this correction in your next issue you will much oblige

Richard V. Tuson.

Tuson's Disinfectant Company, New Charlton, Kent.

P.S.—Having received from many parts of the country applications for information as to the methods of using the disinfectant for skin affections, I wrote to Mr. Edgar, who kindly replied as follows:—

"Camden House, Dartford.

"Dear Professor Tuson,—I have much pleasure in supplying the information you require. Had my paper been strictly upon Eczema and its treatment, I should have entered much more fully on the subject.

"*In Eczema.*—Commence with a solution of the No. 1 Liquid Disinfectant—one part to thirty of water, increasing strength to one to twenty after a few days' application. Apply night and morning.

"*In Grease.*—One part to twenty-four of water for first few days, increasing strength of solution to one to twelve, three times a day. After a few applications the disgusting stench of the disease is entirely removed.

"I have never found it necessary to take precautions, excepting occasionally. With dogs it is advisable to lead them about on a chain for a few minutes after application.

"In severe cases of Grease I think this agent may be safely used up to a strength of one to six of water, applied with care. I am confident it will prove to be one of the most efficacious remedies ever tried for this troublesome malady.

"We also use the fluid largely at its full strength for preserving fresh specimens during dissection and also for drying; it answers better than any other agent. I think subjects may be kept from decomposition for almost any length of time, if properly sprayed over.—I am, yours faithfully,

"Wm. Alston Edgar, F.R.C.V.S."

HIGHLAND AND AGRICULTURAL SOCIETY AND THE PLEURO-PNEUMONIA INQUIRY.

SIR,—Without one word of comment on the above article, which appeared in the last Journal, I may be allowed to state the following facts. In August, 1886, an outbreak of Pleuro-pneumonia occurred at farm A. After slaughtering a number of animals, including the bull, the stock was inoculated. No more deaths from Pleuro-pneumonia. In May, 1887, an outbreak of Pleuro-pneumonia occurred at the farm B, where the cattle were housed for examination. The frequent coughing among the stock was rather noticeable; supposed cause Tuberculosis. After a number of animals had been slaughtered the whole herd was stamped out. The *post-mortem* examinations showed six recovered cases of Pleuro-pneumonia, which accounted for the coughing. A bull had been bought on to the farm six months previous to the outbreak—the only animal brought to the farm for years. This animal, when killed, was perfectly healthy.

Previous to August, 1886, a heifer from farm B was sent to the bull at farm A. So far as known, the bull was then perfectly healthy; the heifer did not prove in calf and was killed. This heifer, no doubt, brought the disease to the stock on farm B. What use could inoculation be after an outbreak had occurred in a stock? Might not compulsory examination of all cattle dying on a farm, and less compensation when found infected, be a means of preventing the spread of this costly disease?

Turriff. P. BEATTIE, M.R.C.V.S.

POPULAR VETERINARY LITERATURE.

DEAR SIR,—Kindly give insertion to the following remarks in regard to the advertisement in your Journal of May, in which the proprietor of the *Farming World* offers a prize of £30 for the best treatise on "The Ailments of Horses, Cattle," etc.

I think it would be very much out of place for any veterinary surgeon to offer his services in compiling a paper on the above subject for the paltry sum of £30—or, in fact, any sum.

No man who has the interest of his profession at heart would offer to undertake such a work as the one advertised for by the proprietor of the *Farming World*. I would consider the veterinary surgeon who writes for any such prize as the above or similar, is no gentleman of professional standing, and is unworthy of recognition. Who is he that would sit down and attempt to write an excellent treatise for £30 to be issued in a penny weekly? I would say his practice is of little account and his principles would be of less. Surely the education we got at college and the amount picked up in practice is worth more, and I would say it is worth more to the profession, and the public have no right to the knowledge required by the veterinary surgeon; therefore it would be unjust to the profession in general for any man to write a treatise on the above.

I think every gentleman should discard the offer given. There are far too many books and pamphlets and veterinary works issued, and as many quacks to thirst after them, without encouraging more. It would be better if there were fewer articles issued on veterinary surgery, and for the practitioner in general.

At present the *Farming World* gives answers to correspondents for treating their animals, which are only a downright nuisance.

The other day I was called out to see a cow suffering from acute Pneumonia. My first visit was at night, and you can imagine her condition from her temperature, 105·2°; next morning 103·1°. At first I told my client to give her nothing but what I ordered. On my third visit I was told she took a

shivering fit (which was due in this case to doors being left open), and that she had had no passage yet. Of course we all know there is a certain degree of constipation present, and for this they had given the cow lbjss of Sulph Magnes. I condemned this treatment, and as an excuse I was told they read it in the *Farming World* for constipation (only, I believe).

Now, is it not high time work of this sort was terminated?—penny papers playing into the hands of a lot of blockheads and injuring the practitioner. If the editor of the *Farming World* and his fireside surgeon would recommend their correspondents and the public to walk up to the orders given by their veterinary surgeon in each particular case, they would be conferring a benefit on the public as well as the veterinary surgeon. But no; that does not seem to be the motive. All is tainted with detestable presumption and empiricism.

In conclusion, it is to be hoped that no professional gentleman of any standing, nor any man connected with the profession, will assist in the compiling of such an essay. M.R.C.V.S.

THE VETERINARY SURGEONS ACT OF 1881.

Sir,—A case is reported in your July number of a person having sued a client for medicine and attendance upon some cows, and that the Judge of the court inquired if plaintiff was a member of the College, etc. He stated that he was liable to a penalty of twenty pounds for every time he acted, not being a member of the College.

Is the Act of 1881 of any service or protection to the qualified member of our profession? Up to the present, I fail to recognise it. There are shoeing smiths in every town, exercising what little skill they possess, in prescribing for horses, and what is more, every quack in the rural districts castrates colts. I am anxious to learn if these several things are contrary to the Act of 1881, and if so, how are such cases to be dealt with? It cannot be expected that members of the College practising in towns will take upon themselves the onus of prosecuting such individuals. May I inquire if the Council will undertake the work, if evidence is given to them? It occurs to me that the College should take some steps to put aside this practice, which could be done by advertising same in the principal newspapers published in such town. Be good enough to afford some information upon this question, and oblige, faithfully yours,

Limerick, *July 3rd.* R. H. Dyer.

[The Veterinary Surgeons Act is capable of conferring great benefits upon the profession in the United Kingdom, if the members care to avail themselves of its provisions. In direct proportion as they do so, so will the evils complained of disappear. If our correspondent will refer to clauses 16 and 17 of the Act, he will see the ample powers with which the profession is endowed—powers as great as those possessed by any other profession—for its protection. Ed. V. J.]

MR. POTTIE'S REPLY TO MR. ROBINSON.

Sir,—I observe, in the Veterinary Journal of last month, that Mr. Robinson, Greenock, questions the truth of the statement that I brought the subject of the propagation of Influenza from stallions to mares before the West of Scotland Veterinary Medical Association, and on that account claims to be the first and only one who did so. One of the reasons he advances seems to me rather curious: it is that he is a pretty regular attendant at the meetings. Now some people seem quite satisfied with their annual performance in this respect, if they attend one out of the four. I do not hesitate to include Mr. Robinson amongst such; but suppose he attended double that

number, is it not possible for me to have mentioned this subject in his absence? If it were, his reasoning goes for nothing. It would seem a strange reason for a student to make, who could not answer his professor's questions, to say: "You never lectured on that subject, or I should have heard you, for you know that I am a pretty regular attendant, and have been in attendance at every fourth lecture you gave." That would seem an unreasonable reason. Yet this is Mr. Robinson. But no amount of negative evidence has weight with positive statements. So thus I quote from a letter just received from Mr. Weir, our present President, whose statement can be relied on by the profession. He says: "I distinctly am of opinion that it was from you I first heard of this—Influenza being communicated to mares by stallions—and at one of our meetings."

It is no doubt galling for Mr. Robinson now to find that all along he has been playing second fiddle, and that, while he was communicating his newborn ideas on this subject, some parties were saying, "As usual, Mr. Robinson could kale het again."

Paisley, *July 19th.* ALEX. POTTIE, Veterinary Surgeon.

A QUESTION WORTHY OF CONSIDERATION.

DEAR SIR,—You will perhaps kindly allow me a short space in your valuable Journal, for the purpose of introducing a question highly deserving of notice, and one which I consider, in justice to other veterinary practitioners similarly situated to myself, demands some attention, and ought to have been taken into consideration at the same time that the holders of the certificate of the Highland and Agricultural Society were. There are many reasons and claims the gentlemen I allude to possess of far greater magnitude than what it were possible to adduce on their behalf. For the purpose of illustration, I will refer to my own case, which probably is not an isolated one. If so, so much the better. Session 1855-6, I paid the entrance fee, 21 guineas, and became a student at the Royal Veterinary College. I also joined the Medical Association and Professor Varnell's class. Previous to becoming a student I had seen practice, and was also a member of the Pharmaceutical Society of Great Britain. I attended the lectures, dissection, and hospital practice, and strictly conformed to the rules and regulations of the College, and, without wishing to be thought egotistical, gained considerable favour with the professors, who often told me that the superior knowledge which I possessed of chemistry and materia medica was a great acquisition to a veterinary surgeon. But, unfortunately, through sickness and other unavoidable matters, I was unable to complete the term of probation to become eligible to present myself for examination for the diploma of the R.C.V.S. I some time afterwards wrote to the College, asking to be allowed permission to present myself for examination, but the reply was that my request could not be granted, as it would be an infringement of the rules, and I should have to attend the College for another three months, which I was unable for certain reasons to do. Consequently, I was obliged to rush into practice; for I may here state that, previous to becoming a veterinary student, I had entered into a life-partnership and become *paterfamilias*; and I have now been struggling on in the profession for over thirty years, which, in consequence of not being able to add to my name M.R.C.V.S., has acted as a perpetual brake to my success. I may also state that during this time I have contributed several articles to our local press on various questions relating to the profession; but I have not had the effrontery to do as a certain person, who came some years ago to the town where I reside and commenced practising as a veterinary surgeon, issued his bill-heads bearing the arms of the R.C.V.S., and member of the Royal College of Veterinary Surgeons, one of which I have at the present time, although

he merely held the certificate of the Highland and Agricultural Society. Under his assumed title he gained appointments and gave evidence before the magistrates in cases, on the presumption that he was what he professed to be; but since then, in the year 1881, he was provided with a diploma of the Royal College of Veterinary Surgeons at a less price than what it cost me to become registered an existing veterinary practitioner, although it is quite possible that he never was within the walls of the Veterinary College, nor that he ever contributed one farthing towards its support beyond the small amount that he paid for his diploma. I do not bear the person the least animus. I merely bring the matter forward for the purpose of shewing the difference betwixt his case and mine, and appealing for an unbiassed opinion as to which is the most entitled to recognition—the one who had paid the fees and been a student at the College, or the one who had not? I do consider that such cases as mine might be put under a practical examination by the payment of a certain fee. I am not appealing on behalf of those persons who have never received any training at the College, but strictly on behalf of such as have been students and are still in practice. Perhaps some abler pen than mine will take the question up, so that it may be thoroughly ventilated.

"A Lancashire V.S."

ANSWERS TO CORRESPENDENTS.

B.—There is no law to prevent any one practising who is not in the Register of Veterinary Surgeons, so long as he does not designate himself by a title which might lead the public to infer that he is registered, but he cannot recover fees in a court of law. See Section 17 of the Veterinary Surgeons Act.

Vigilans.—We are sorry we cannot give you the particulars.

Correction.—At page 70 of the Journal for July, line 28 from bottom, for "sweating" read "swelling."

Communications, Books, Journals, etc., Received.

Communications have been received from F. Smith, A.V.D., Aldershot; E. E. Bennett, A.V.D., Aldershot; G. G. Mayor, Kirkham; W. Caudwell, Notts.; F. Somers, Leeds; H. Singleton, Ealing; W. A. Taylor, Manchester; J. Gilmour, Leven, Fife; "M.R.C.V.S.;" R. H. Dyer, Limerick; J. Hunter, Skene, Aberdeenshire; "A Lancashire V.S.; F. L. Gooch, Stamford; R. Rutherford, Edinburgh; R. V. Tuson, London; A. W. Hill, London; J. A. Nunn, A.V.D., Natal; W. D. Fairbairn, Cupar; R. W. Burke, A.V.D., Jubbulpore; P. Beattie, Turriff; F. W. Kendall, Hitchin; W. Ridgman, Liskeard; S. Villar, London; A. Pottie, Paisley.

Books and Pamphlets: *J. G. McKendrick, M.D.*, A Text-book of Physiology; *G. Gresswell*, An Examination of the Theory of Evolution; *L. G. Neumann*, Traité des Maladies Parasitaires; *Dr. H. Möller*, Das Kehlkopf-Pfeifen der Pferde; *Dr. E. Fröhner*, Lehrbuch der Thierärzlichen Arzneimittellehre.

Journals, etc.: *Journal of National Society of Victoria; Recueil de Méd. Vétérinaire; Hufschmied; Thierarzt; Wochenschrift für Thierheilkunde und Viehzucht; Russian Journal of Veterinary Science; Echo Vétérinaire; Giornale Veterinaria Militare; Clinica Veterinaria; Annales de Méd. Vétérinaire; Archiv. für Wissenschaftliche und Praktische Thierheilkunde; Oesterreichische Zeitschrift für Wissenschaftliche Veterinärkunde; Repertoire de Police Sanitaire Vétérinaire; Live Stock Journal; Lancet; American Live Stock Journal; Edinburgh Medical Journal; British Medical Journal; London Medical Record.*

Newspapers: *Scotsman; Pioneer; Newcastle Daily Chronicle; Newcastle Daily Journal; Yorkshire Post.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

SEPTEMBER, 1888.

ON A PECULIAR OUTBREAK OF OSTEO-POROSIS OR SOME OTHER "BONE DISEASE" IN CATTLE.

BY A. E. MACGILLIVRAY, BANFF, N.B.

As a rule, the diseases attacking the bones of cattle are, comparatively speaking, far from satisfactorily understood, their nature and course being open to considerable doubt, writers on the subject holding very conflicting opinions. It is therefore with great diffidence that I offer the following notes on what I consider a rather uncommon, if not unprecedented, occurrence of "Disease of the Bones" among the cows on a farm in this locality.

Within the past fifteen months no less than five young cows and a pregnant heifer have had to be slaughtered in consequence of the effects of this "Bone Disease," which, in so far as I can see, is the Osteo-porosis of Williams. With the exception of the heifer, the initiatory symptoms in all were the same—namely, a peculiar stiffness in progression, the least movement forward being accomplished with extreme caution, as if the animal's back were stationary and immovable, and the legs flexed as little as possible; great difficulty in rising; at times the shoulders turned out, and again the elbows in a like position; emaciation in three of the cases; no particularly prominent swellings in any of the joints. Three of the cows entirely lost the power of rising, and of these two were in good condition and one the reverse. I had all the five ultimately slaughtered.

The case of the pregnant heifer slightly differed from the others. Here the first symptom of anything being wrong was severe tenesmus, with a bloody discharge from the rectum. I explored *per vaginam*, but found nothing wrong, though on examination *per rectum* I discovered a swelling exactly below, in so far as I could judge, the junction of the lumbar vertebræ and sacrum. This abnormality, on pressure, seemed to fluctuate slightly, so I intro-

duced a covered knife *per rectum*, and opened it freely; very abominably smelling sanious pus escaped, and continued to do so for a week or so. The tenesmus now became much more severe, and ultimately the heifer aborted, which untoward circumstance I have no doubt resulted from the almost continual straining, caused by the irritation of the diseased part or parts in the roof of the pelvis, as the fœtus was alive. Some time after the abortion the discharge from the rectum and the tenesmus gradually came to a conclusion, but about two months after two abscesses appeared externally, one on each side, about the junction of the sacrum and coccyx, or rather, about the posterior third of the sacrum. These abscesses continued to discharge now and again, till the heifer went to the butcher in good fair condition.

Having given these details, I will now pass on to note the *post-mortem* appearances, which at first rather staggered me. Before I saw them personally I was told that the butcher could "cut up the backbone quite easily with his knife, as it was very soft." I felt inclined to pooh-pooh this rather remarkably unlikely story, but a personal inspection confirmed the report from the slaughter-house. On cutting into the bones I found them high-coloured, soft, and spongy, and on squeezing the cut surfaces or scraping them with a knife, a dark, pinkish, bloody fluid freely oozed out in all directions; in fact, there appeared to be a remarkable deficiency of solid material, and, instead, a preponderance of abnormally soft osseous tissue of a pinkish-red colour. The periosteum was similarly affected, but not so high in colour, and was easily peeled off. The vertebræ were the most seriously affected, but the diseased condition was easily perceived in the other bones.

As no traces of Tubercle were found in any of the patients, and from the *post-mortem* symptoms presented, I came to the conclusion that I had to deal with the Osteo-porosis of Williams. Be this as it may, however, the extreme rarity of such a peculiar outbreak of a but partially understood disease rendered its being made public almost a necessity.

A USEFUL HORSE BOX.

BY GERALD H. FENTON, M.R.C.V.S., A.V.D., INDIA.

In conversing with a friend on this subject the other day, he (Col. Hindle, of the Madras Army) showed me an invention of his, which apparently has been lying dormant for some years.

After studying the advantages that this box undoubtedly possesses, I am induced, by the Colonel's kind permission, to send the plan and description to the Veterinary Journal, as I feel sure a number of its readers will feel interested in the subject, and possibly might improve on some of the details.

The mode of feeding is not mentioned, but a blanket rigged up for the hay and a nose-bag for the corn would meet this requirement.

I should much like to see this horse box come into general use, for the reasons stated in the explanation.

Explanation and description of the many and various advantages of the horse box :—

A. Bottom of box.
B B. Two sides.
C C. Two ends.
D. Moveable hood, waterproof canvas.
E E. Curtains at both ends.
1 1. Dees to which a strap is attached, passing over the hind quarters of the horse like a kicking-strap.
2 2. The same to which hobbles, round fetlocks are attached.
3 3. Do. to which strap is fastened that passes over the withers of the horse to prevent him rearing.
4 4. The same to which hobbles are attached.
5 5. Dees to which a breeching strap is fastened.
6 6. Dees to which a broad breast strap is fastened.

The two sides and two ends have hinges with pins that can be withdrawn, and so permit of A, 2 B's, and 2 C's being separated, and made convenient for storage in coach-house, or warehouse, or railway station.

The moveable hood can be taken off by the screws (which are like compass screws), being unscrewed slightly, when the hoods can be placed on ends one within the other in the coach-house.

The curtains can be rolled up or let down at will, and are like inverted aprons of a gig ; in the lower portion of the curtain is a thin iron rod with a loop at each end, into which two rods attached to the sides of the box fit, so as to allow a current of air to pass into the box from the bottom.

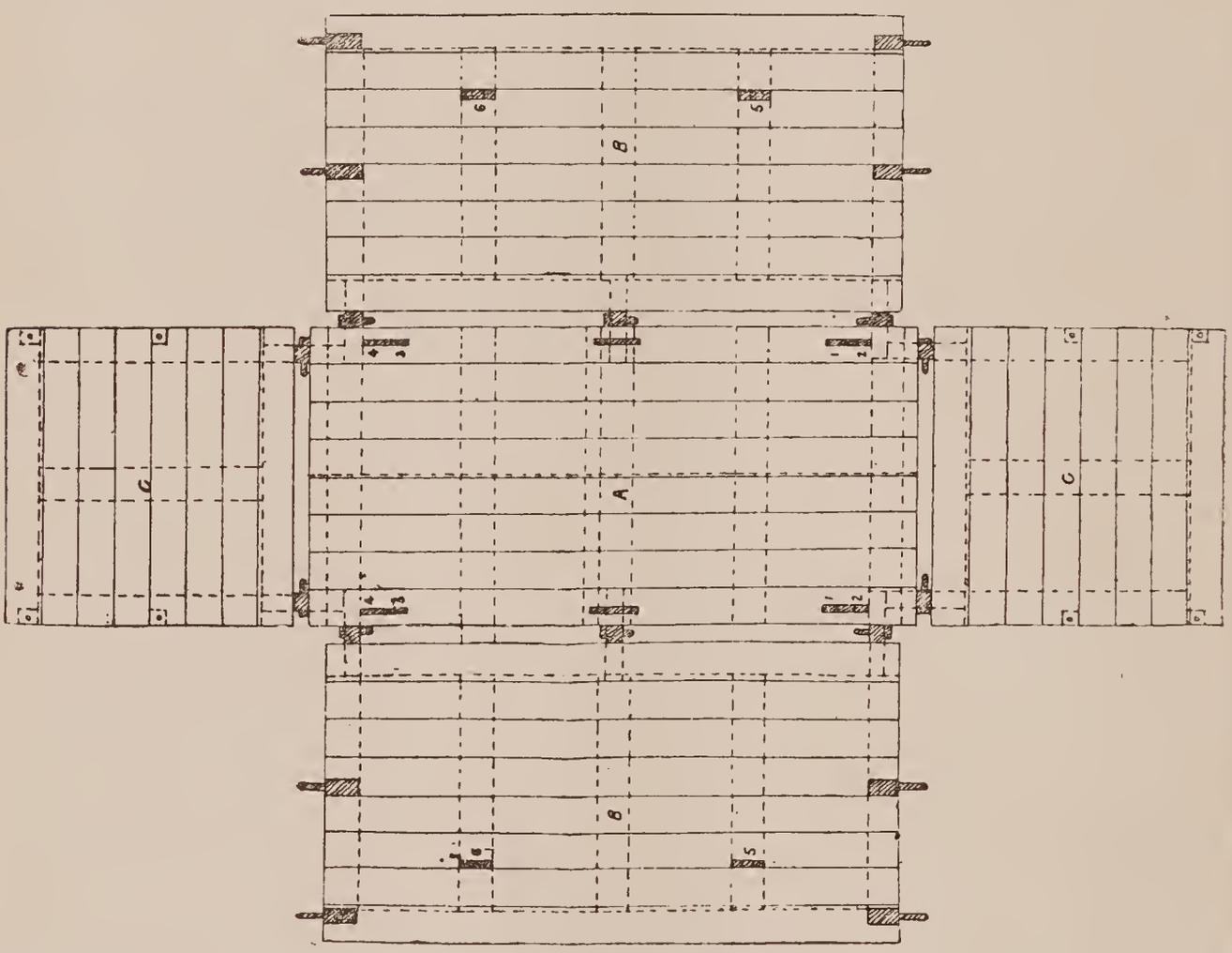
In order to put the horse in the box, the sides and two ends are unpinned and laid flat on the ground, in the same plane as the bottom of the box ; the horse is then led on to the box ; the hobbles, kicking-strap, and wither-strap, breeching and breast plate are then fastened, the sides and ends lifted up, and pinned like the tail-board of an ordinary cart, and the hood is screwed down ; the horse cannot by any possible means injure himself. If necessary he can be hoisted under a pair of sheers with a broad belt or sling under his stomach, and then gently lowered into the position he adopts when lying down, and the kicking and wither straps are fastened ; he cannot rise. Had this plan been adopted, " Bluegown " could not have kicked himself to death.

The box has four small wheels about the size of a railway porter's barrow wheel, and can be moved along the platform and run on to a flat truck, which should be brought as nearly as

possible with its surface level with the platform; if there is a slight incline, a couple of planks placed at the distance of the wheels of the box apart will do—even any ordinary ballast truck would hold three of these horse boxes. The boxes can then be lashed to the truck.

The advantages of this box are—

1st. Every trainer or owner can have any number of boxes of his own ready at hand; if distant from the railway station, they can be taken to pieces and carted to the station.



PLAN OF HORSE BOX.

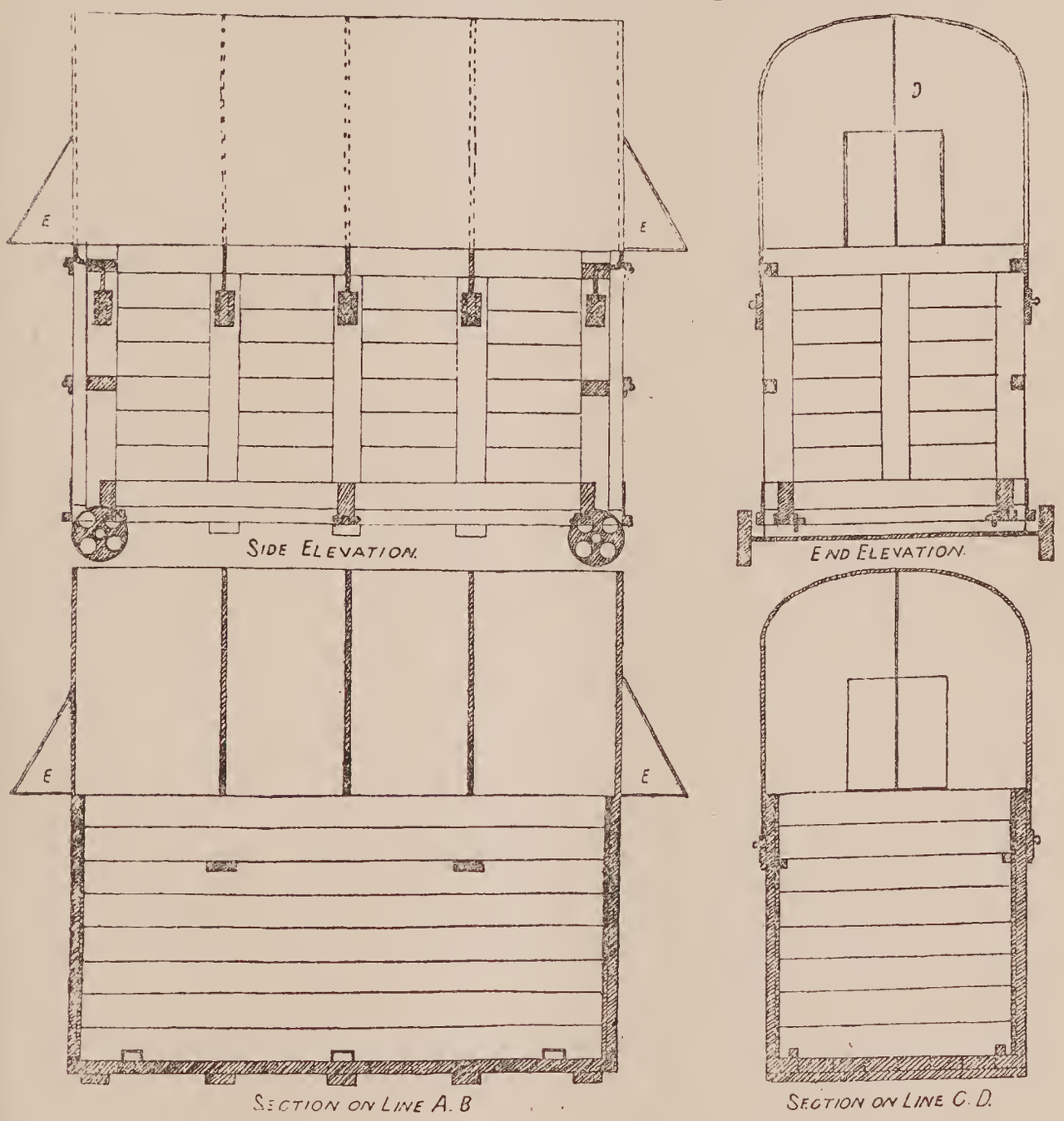
2nd. He knows they are clean, and that no animal infected in any way has been in them before.

3rd. They can be stored at the smallest of stations, and be ready for use for hunting men or gentlemen taking their studs to town at a moment's notice.

4th. They would be a saving both to the railway company and to those who wish to send their horses by rail, instead of having the cumbrous horse-boxes at present in use, and trucks are always procurable.

5th. They would be especially useful in embarking or disembarking horses that have to be sent anywhere by sea, for they could be slung up from the yard-arm, and the horse would have a box on deck.

In case of fire on a railway truck, the ends and sides can be immediately let down and the straps loosened, when the horse could jump off, and so not run the risk of being burned to death, as "Klarikoff" in "Kettledrum's" year, 1861. The box obtained honourable mention at the Madras Soldiers' Exhibition of 1869. It was then designed solely for the safe landing of Government horses imported from Australia, but the Government would not adopt it, as they said they only purchased horses that



had been safely landed. No heed was taken of the sufferings the poor animals underwent on landing through the Madras surf; twenty per cent. of the horses so landed are badly injured—some irretrievably so. The boxes can be made of light strong wood, as the horse cannot possibly injure them or himself. They could also be used for prize stock, if made on a larger scale, and thus prevent the fat beasts having to walk any great distance, and so throw out Spavins, etc.

A CASE OF KYLOSSIS OF THE LIMBS TREATED BY TENOTOMY.

BY FITZGERALD EASSIE, M.R.C.V.S., YORK.

A WELL-NOURISHED carting colt was found to have acquired a contraction of the flexor tendons of the limbs, a few days antecedent to a local show for which he was entered with his dam. The idea of exhibiting him was abandoned, and he was turned out. He was then about five months old. At the age of nine months, when treatment was resolved upon by the owner, the contractions were of so decided a nature that he was completely crippled. At this period the fore limbs in profile presented a perfectly straight outline, the anterior surface of the hoof running with the pastern perpendicularly to the fetlock. The hoofs were altogether misshapen, the toes being rounded and obtuse, the soles looking backwards and the heels placed high in the air. The hind legs were similarly affected, though not to the same extent.

The flexor tendons of the off fore leg were firstly divided, with antiseptic precautions, by the operation of subcutaneous tenotomy; and after all adhesions had been broken away by forcible extension, the limb was enveloped from the knee to the coronet in a clean woollen roller, and finally encased in a thick envelope of plaster of Paris bandages. At the end of a week, a shoe with a projecting toe-piece (two inches) was applied to prevent recontraction, and the animal was turned into a loose box. The tendons of the other fore leg were subsequently severed in the same manner, the wound healing by primary adhesion. In this instance the limb was forcibly extended as before, but the plaster bandages were dispensed with and no shoe was applied. Previous experience led me to contrast the results of this variation in method, the sequel being, as I anticipated, that the *left* leg—in which the application of the plaster cast and the shoe were omitted—made a more satisfactory recovery than the *right*, on which these precautions had been adopted. The plaster seems to retard the process of complete recovery, by preventing the slight movement necessary to the differentiation in growth of the *perforans* and the *perforatus* tendons. The application of the *spur-shaped* shoe—in this particular instance at least—was not a success; for whereas in the left leg, for which it was *not* used, there proved to be no necessity for its application, in the right, for which it *was* employed, it produced, for a month at least, a condition alarmingly opposite to the original lesion.

About six months have now elapsed since the first set of tendons were divided, and the animal appears to have perfect control over

both his fore limbs. The left is quite normal to the touch, and as regards outline. The right (on which the shoe and plaster were used) is symmetrical as to the position of bone and ligament, but thickened at the seat of the operation.

Tenotomy was not resorted to in the hind limbs, the feet being simply pared as nearly as possible to their natural shape, and a "*tip*" applied to each—the iron at the toe very thick, rapidly decreasing in depth posteriorly. The contracted flexors, with the *continued* traction exerted upon them by this improvised leverage (absolutely uninterrupted since the thickened shoes were applied to *both* feet), gradually lengthened, the *frogs* ultimately assuming their natural position upon the ground. The contracted heels also, with the latitude allowed by the *tips*, gradually expanded, the front ones following suit, until, all influences combining, the animal was restored to a state of usefulness, in marked contrast with its original deformity.

Such is the history of a case, common enough in the practice of our profession, and of interest only insomuch as it involves a question of causation not dependent upon congenital conditions, with which Kylossis in young stock is generally associated.

This particular animal was born with well-formed limbs, lived the earlier portion of its life with perfect control of them, and at the age of five months became the subject of contracted tendons. We may advance theories of Paralysis, of Spasm, of hyper-development, and of antagonistic muscle, but the causes which determine these accidents of growth in an apparently healthy animal are stil remote in the chaos of nervous complexities which govern the processes of assimilation.

Again, the surgical means employed—the rapid reduction of the deformity—as practised so successfully by the profession, is an argument incomparative pathology well worthy of consideration in the questionof the relative advantages of *mediate and immediate* reduction in the treatment of talipes and allied distortions.

FRACTURE OF THE SESAMOIDS OF ALL FOUR LIMBS.

BY C. RUTHERFORD, F.R.C.V.S., ASSISTANT PROFESSOR, ARMY VETERINARY SCHOOL, ALDERSHOT.

THE following case may be of interest to some readers of the VETERINARY JOURNAL. A spirited, fast, well-bred polo pony, which belonged o Capt. G——, whilst being taken out to exercise at Pinetown, Natal, in February, 1886, suddenly shied, it was said, and commnced to canter for a few yards from that officer's door. The natve boy riding it, dismounted on finding the

animal going very stiffly. When seen by me half an hour afterwards, the pony was lying close to the spot where the boy had dismounted, and on manipulation one could feel most distinctly that the sesamoids were broken.

A *post-mortem* examination within an hour afterwards showed extensive extravasation of blood around all four fetlocks; transverse fracture of both sesamoids of both fore and of the near hind close to their lower edge, and also of that of the outer sesamoid of the off hind close to the upper edge of the bone. The left sesamoid of the off hind was fractured in three places—split without displacement of the pieces.

The anterior surface of the sesamoids of the off fore and near hind limbs were almost denuded of cartilage, and of a bluish colour.

The lateral ligaments of all four fetlocks, and the branches of the superior suspensory ligaments of both fore, were lacerated, torn, and bathed in extravasated blood.

There was abrasion of the cartilage of the upper extremity of the suffraginis of the off hind, and of the inferior extremities of both metacarpi and both metatarsi, most probably from contact with the edges of the fractures mentioned above.

This pony had been played at polo at least twice a week since purchase in Natal about three months previously, and had not been lame during that period, so far as the owner was aware. Is it not unusual to meet with a case of such extensive injury to the sesamoids of all four fetlocks, occurring whilst dong ordinary exercise, and when apparently in good health? There must of course, we presume, have been some malnutrition or disease of these bones, though not apparent to the naked eye.

TWO REMARKABLE CASES.

BY DANIEL D. LEE, M.D.V., INSTRUCTOR IN ANATOMY AND OPERATIVE VETERINARY SURGERY, HARVARD UNIVERSITY U.S.A.

Case I.—*Pin in the Tongue of a Cow.*

Early one morning I was called to see a cow which had not eaten for the past five days.

I found the animal naturally much emaciated and in pain, with the head and neck kept extended. Rumination was entirely lost; the breath was very offensive.

On putting my hand into the mouth, I was able to remove a mass of decayed food, blood, and mucus from the throat. I found nothing in the anterior part of the mouth. I expected a history

of choking, but was unable to get any, the only history being that the cow had suddenly refused to eat.

I said I thought the animal had partial paralysis of the throat, for when bottled she was still able to swallow in a jerky manner.

I, however, decided to pass the probang before deciding positively.

Later in the day I returned with a speculum oris and probang. On introducing the speculum the cow showed great pain, and threw herself down. I continued the examination, and, having my right hand under the tongue and the bar of the speculum over it, I felt a small sharp body coming through the under surface of the tongue, which I seized and drew out. It proved to be a piece of an ordinary toilet pin, about half an inch long, with the head broken off.

There was no swelling of the tongue to lead me to suppose that any foreign body was embedded in it, nor was there any discharge. The pressure of the bar of the speculum on the dorsum of the tongue and my fingers underneath, had forced the pin out.

Recovery was rapid; the cow at once began to eat ravenously.

I attribute the fact that the throat seemed to be the seat of the trouble, to some nerve in the free portion of the tongue being transfixed by the pin, and this causing so much pain that the animal was unwilling to raise the tip of the tongue, this act we all know, being the first motion in the mechanism of deglutition.

Case II.—*Paraphymosis in a Dog.*

Somewhat over a year ago, I was called to see a spaniel dog which was troubled with Paraphymosis.

After giving my diagnosis and prognosis, I was told that my services would not be required, as a homœopathic practitioner was treating the case.

Last week I was again summoned, and found the dog nearly dead. He had been vomiting constantly for five days, often throwing up blood.

The old trouble with the penis was still present, having never been entirely cured.

On examining the penis I found the os penis entirely denuded of soft tissue for an inch and a half from the end, and in a state of caries. The soft parts were much ulcerated, and when lapped by the dog bled profusely. The poor animal was so weak from loss of blood and vomiting, that I gave a very unfavourable prognosis, and advised, as his only chance, that I should at once amputate the diseased penis, as septicæmia had evidently set in.

I ordered small and repeated doses of brandy and water and of

milk and lime water, and returned in a few hours with an assistant to operate. I removed the penis just anterior to the erectile bulb, slitting up the sheath. Hæmorrhage was slight and entirely controlled by hot water. I slit the urethra, secured it by sutures, and drew the soft parts over the bone, which I cut off well behind the bulb.

I should have removed the entire penis, leaving an opening for the urethra just under the anus, as I have successfully performed this operation on the dog, but feared the great hæmorrhage likely to result, and to withstand which the dog was not strong enough.

The animal did well after the operation, passed urine twice, and did not bleed, but died of shock in the evening.

On questioning the owner, I found that twice during the year the os penis had become denuded of soft tissue for half an inch, and had decayed and broken off, the end of the penis again becoming healthy until another attack of Paraphymosis, when it again became diseased.

The vomiting of blood I finally traced to the dog having licked and gnawed his penis, swallowing the blood and then vomiting it.

The homœopath had been treating him with large doses of bismuth for hæmorrhage from the stomach. This case is one that could certainly have been saved if treated in time.

In cases of this sort I recommend amputation of the penis at the ischial arch. The castration of the dog first makes the operation easier, but is not necessary.

The skin of the sheath is to be first divided by a longitudinal cut with the scissors, beginning at the opening of the prepuce and extending backwards. The penis is then dissected out, and a catheter passed into the urethra. An incision is now made down into the urethra (being guided by the catheter) in the perineal region, under the anus.

The mucous membrane of the urethra is drawn out, and secured on each side to the skin by sutures.

After this, an écraseur is adjusted to the penis, which is then removed.

It is necessary to remove a triangular piece of skin on each side of the median line, including, in the base of the triangle, the skin and mucous membrane of the sheath, and running the point up to the under surface of the pelvis.

The edges of the wound should then be sutured together; they will rapidly heal, the parts being so vascular. If the skin is not removed, a pendulous fold will remain, and the mucous membrane of the prepuce will continue to secrete, making the parts foul.

DIAPHRAGMATIC HERNIA.

BY KAY LEES, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, NEWBRIDGE, IRELAND.

THE case in question occurred in a waler (Australian) gelding, a riding wheeler in one of the batteries under my charge during the Durbar held at Rawal Pindi, India, for His Highness the Ameer of Afghanistan.

The battery had gone out for drill at 10 a.m. on the Khana plain, which, owing to the severe rain, had become very deep in mud. On returning at 11.30 a.m., the horse, which was a very free worker, threw himself down on being taken out of harness, and the man who was riding him stated that he had not observed anything previously amiss with him. He presented at first the ordinary symptoms of spasmodic Colic, and the usual treatment was adopted. The peculiarity noticed was that, after about an hour, the abdomen presented a tucked-up appearance, great difficulty in breathing was experienced, a loud and peculiar gurgling sound was heard over the right thoracic region, nostrils dilated to a very great extent, and the countenance had a haggard expression—much more so than is usually observed in abdominal diseases—pupils dilated, semi-comatose condition, continuous and persistent abdominal pains, injected visible mucous membranes; cold sweats bedewed the body, and the muscles generally were in a tremulous condition. The patient persisted in standing, with the fore legs apart, and, at intervals, straining violently. The most noticeable features in the case were the manner in which all the symptoms increased spasmodically with intervals of paroxysms, the abdomen appearing to empty itself of its contents, and the gurgling in the chest, with difficulty in breathing, increasing in corresponding ratio until the animal finally died at 8 p.m. the same day.

A *post-mortem* was made the same evening. On opening the abdomen, the most noticeable feature was its comparative emptiness. A rupture about four inches long was found on the right side of the diaphragm at its inferior part and situated in the muscular portion; round it, on both the thoracic and abdominal surfaces, was a quantity of extravasated blood, staining the muscular tissue; the whole of the small intestines, from the pyloric orifice of the stomach to the illio-cœcal valve, were found to have passed through the rupture into the cavity of the thorax, displacing the right lung to the left side of the thorax and under the apex of the heart. Round the small intestines, at intervals of about three feet, there were gangrenous rings, which gradually softened into lighter colours of inflammation and congestion, evidently caused by the small intestines becoming constricted in the rupture and then being released by the animal straining, and passed into the thorax,

when a fresh portion became imprisoned, to be relieved in turn. All the other internal organs were more or less healthy.

As the case appears to be an uncommon one, and the symptoms so diagnostic, it may perhaps be of some interest to the readers of the VETERINARY JOURNAL.

TWO RARE CASES.

BY P. BEATTIE, M.R.C.V.S., BOGFERN, TURRIFF.

I.—RUPTURE OF THE RECTUM IN A FIVE-YEAR-OLD HORSE.

SOME time ago I was asked to castrate a five-year-old cart-horse. Every precaution was taken to have the animal duly prepared for the operation. When lying the animal did not struggle much, but strained rather badly. When the operation was finished, I noticed the rectum protruding to the extent of about a foot. All attempts to return the bowel when the horse was lying only made the condition of affairs worse. There was no difficulty in putting matters right whenever the horse was on his feet.

In about half an hour after the operation signs of slight colicy pains were noticed. A dose of linseed oil, with anti-spasmodics, was given, the latter repeated. The pain rather increased than diminished. From the time the animal was operated on no fæces were passed.

The rectum was examined twice a-day, but nothing was found amiss until the fourth day, when I noticed blood on my hand. I then discovered a transverse rent in the bowel, quite sufficient to allow my hand to pass through. Death from Peritonitis took place on the fifth day.

II.—INVERSION OF THE BLADDER IN A CART-MARE.

In June last my attention was called to an aged cart-mare, thirty hours after foaling. The owner, seeing the mare straining heavily and making no progress in foaling, being in weak health himself, sent for a neighbouring farmer. This person had no sooner begun to find what was amiss than he complained of a bag in the passage he could not understand. The foal was soon extracted; the after-birth almost immediately followed, but the bag remained. The owner reported to me that he thought the mare was not micturating properly, that she also had colicy pains. On examination I found the bag complained of, and from the absence of the meatus and the squirting of urine from the ureters I concluded that the bladder was inverted.

I tried to return the viscus, but failed. Before taking any active steps, I asked my friend Mr. Tait, veterinary surgeon, Turriff, to examine the mare. He confirmed my diagnosis, and it was agreed

to allow the mare three days to pick up, as the colicy pains had disappeared and her appetite was much improved. At a subsequent visit the bladder was removed, partly by the écraseur and partly by ligature. The patient never showed a bad symptom, and is now thriving well and rearing a fine strong foal.

FIBROUS LIPOMA IN THE HORSE.

BY J. A. NUNN, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, NATAL.

THE animal from which the tumour was taken died of South African Horse Sickness in April, 1887. The tumour, which weighed about four ounces, was the size of a hen's egg, and was encapsuled in the peritoneal coat of the colon. On section it showed all the usual appearances of a fibrous lipoma, being divided by numerous strong fibrous tuberculæ into sections, which contained the gigantic fat cells commonly found. Lipomata are usually found in connection with existing adipose tissue, although cases are mentioned of their having been found in the human being in parts that do not in health contain fat—such as the sub-mucous tissue of the intestine, dura-mater, heart, liver, bone, muscle, etc. As this tumour was altogether in connection with a serous membrane, and I can find no mention of a similar case in the horse in the few professional works I have access to in this country, I thought perhaps it might be of interest to some of the readers of the VETERINARY JOURNAL.

TRACHEOTOMY IN VIOLENT STRAINING IN THE COW AFTER PARTURITION.

BY J. K. CALDERWOOD, M.R.C.V.S., CLITHEROE.

I SEND a note of the following case, not that it offers any special clinical appearances, but on account of the line of treatment adopted with most satisfactory results. The subject was a Shorthorn heifer, at first time of calving. From what I could learn, she calved naturally, but immediately after commenced straining most violently, and certainly when I saw her there was great danger of Prolapsus Uteri. A truss had been applied, but after cleansing her and carefully examining the womb, I stitched the vulva (as in violent straining, in my opinion, trusses are useless), and gave sedative medicine. The hind quarters were raised, and linseed oil, with solution of opium, injected into the womb.

Next day no better. When the finger is put into the vulva the Os is plainly felt every time she strains. She will get down on her broadside and strain so violently that urine and fæces are

ejected with force, and the rectum is partially everted. Treatment continued for four days with no good result, and as the owner expected her doing no good, I determined (having read Professor Williams' excellent paper in the Journal), as a last resource, to perform tracheotomy, with the result that the straining was greatly, but not wholly, diminished. As Professor Williams pointed out, the abdominal muscles came into play. Next day, feeding fairly well, with occasional straining, but she progressed so rapidly that the tube was removed on the fourth day, when the straining had completely stopped. She has now done well, and is at the present time in good condition.

I attribute this rapid recovery to the operation of tracheotomy diminishing the straining, and thus affording the rest the irritated womb required, and I shall certainly in future resort to this operation earlier in such cases.

THE GEOGRAPHICAL DISTRIBUTION OF BARSATI.

BY R. W. BURKE, A.V.D., JUBBULPORE, INDIA.

The geographical distribution of Barsáti gives perhaps the best indications of its pathology. These indications have rather increased since the important researches of Sir James Paget, Mr. Havilande and others, on the distribution of Cancer in England. It is conclusively shown, that in human beings Cancer does not prevail to any extent, if at all, in certain rocky districts which afford much limestone, and suggests preventive means in other districts where it is more prevalent. Dr. Henry Butlin has already shown that "High and dry localities are unfavourable to the occurrence of Cancer, and that the disease flourishes chiefly in low, flat parts of the country (England), which are covered by alluvium and watered by many streams that are subject to frequent floods." (*British Medical Journal*, July 11, 1885.)

A fact connected with this difference of distribution is that which I pointed out some years ago, viz., that the prevalence of Barsáti was associated with the principal river systems in India. In examining the distribution of Barsáti in India, we found that the highest percentage of admissions from this cause was noted in the Bengal studs, which were situated on the banks of the principal river system in the country. The government stud at Hájipur, near Patna, was abolished many years ago, in consequence of this very prevalence of Barsáti among the horses. Since my return to India recently, I had shown the presence of Barsáti to be greatest in stations situated on the banks of the river Ganges, and that in hilly districts which were located some distance away from the principal river-beds, there was to be found an exceptional

decrease in cases of this disease. Take, for example, Jubbulpore and Saugor districts. Here there is an entire absence of Barsáti, noted in animals often previously affected in other stations, as shown by the Veterinary History Sheets. Not only in this district but in others further down the valley of the Nabadá, the Bijáwar rocks afford limestones of various qualities, among which the famous "Marble rocks" are particularly noteworthy, both for the beauty and purity of the material of which they are composed.

The Saugor rocks, which contain a great proportion of limestone, are also seen to be free from Barsáti. Since my first arrival in this station, more than two years ago, I have not known a single case of Barsáti, either in Government or private animals.

In Raipore district, in the Central Provinces, where limestone is so abundant throughout that it would be difficult to say where it is not found, I am told by many old residents, that Barsáti is practically unknown, and Veterinary Surgeon Hazelton writes to say (Q.J.V.S., April, 1888), that Barsáti is also "practically unknown at St. Thomas' Mount," in Madras.

Spontaneous resolution of Barsáti sore sometimes takes place on arrival at a rocky station, and I have recently had examples of this in battery horses at Saugor, as shown by the Veterinary History Sheets; and I attributed the cure to change of station, where the animals showed rapid recovery under simple treatment. In one case the disease had occurred several times when the animal was in another station, which rapidly recovered on arrival at Saugor, and has never since appeared. Principal Veterinary Surgeon Oliphant has drawn special attention to the fact* that taking horses, subjects of Barsáti, to the hills, brings about a speedy improvement.

I have recommended several horses suffering from this disease to be taken to the hills (Simla, Mussoorie, and Naini Tall), with marked benefit to the animals.

It will thus be seen that the disease prevails chiefly in low-lying, damp localities, and that in rocky stations it has been witnessed only as an exception, at long intervals.

The rocky nature of the soil here doubtless assists in reducing the number of admissions from this disease, but whether by its physical or by its chemical characters, it is difficult to say. "The silurian and other rocks that assist in reducing the prevalence of Cancer," says Dr. Haviland,† "do so more by their physical than their chemical characters." While Dr. William Stanwell (*Lancet*, April 21, 1888) advocates the treatment of Cancer by lime-salts, notably, burned oyster shells, and says that Cancer mortality is less in limestone districts in England.

* Pamphlet on Barsáti, by R. W. Burke, 1886. † *Lancet*, Mar. 10, 1888.

Barsáti flourishes in the low-lying parts of India where heat and moisture are combined. It is seldom or never heard of on the hills, or in dry elevated localities. And the Collective Investigation Committee in England, who were recently engaged in an inquiry into the prevalence of human Cancer, bring evidence to show that that disease prevails under similar conditions.

Dr. Lyford,* of America, writing on Barsáti, says, "It seems to be confined to the neighbourhood of Minneapolis and St. Paul, with the exception of a few cases which migrate each year." Minnesota, with its chief towns, St. Paul and Minneapolis, offer a climatic type precisely similar to that of India in the rains. The chief drawback to the above-mentioned districts, is the trying and unhealthy period which accompanies the annual melting of the snow.

Geographical distribution has never yet been studied in relation to Barsáti, so far as I am aware; but this undue prevalence of that disease in some stations, and almost entire absence in others, require further investigation. The remarkable difference in the prevalence of Barsáti in dry and wet seasons, which I pointed out some years ago, is sufficient to warrant us in believing that there is something underlying in the causation of this disease which has yet to be revealed. Another fact connected with this difference in relation to locality, soil, etc., is that which I first pointed out in 1880, to the readers of the VETERINARY JOURNAL, namely, that in my inquiries into the characters of Barsáti I had noted, that those who would best understand those local conditions which are coincident with an increase of this disease should study well the distribution of human Cancer. "There is abundant evidence to show that Cancer does not thrive in high, dry localities, where the soil is kept sweet by the absence of floods, and the nature of the rocks which either underlie it or form its principal constituents; and that it does thrive and become very fatal where floods prevail, where their emanations are sheltered, where vegetation is killed and decomposed, and where, after the floods have passed away, a rank herbage springs up, composed of sour grass and bitter plants" (*Lancet*, March 10, 1888), as during the rains in India.

VOMITION IN THE HORSE, IN SYMPATHY WITH A LESION OF THE RECTUM.

BY J. B. WOLSTENHOLME, M.R.C.V.S., MANCHESTER.

THE infrequency of vomition in the horse, and the fact that it rarely occurs in connection with any lesion of the alimentary tract below the stomach, gives an importance to, and creates an interest in the act, which otherwise would call for no special mention.

* VETERINARY JOURNAL, May, 1886.

One of the most constant symptoms of intestinal obstruction in the human subject is that of vomition. I have seen this in three or four instances in the horse, consequent upon obstruction of the small intestine at a point not exceeding twenty-four inches from the pylorus, but have never observed the same when the obstruction has occurred lower down.

The occurrence of vomition under the following conditions was to me unique. On July 2nd, at about 5 p.m., I attended a cart gelding manifesting signs of acute abdominal pain. He had passed a little fæces covered with blood.

I removed from the rectum a further quantity of fæces similarly covered, and several clots ; then a calculus could be distinctly felt ; it was firmly grasped by the bowel, and at the extreme distance of one's reach.

It was removed with the utmost care and patience, but the amount of blood present was a sufficient indication as to the nature of the case, and to warrant an unfavourable prognosis. The subsequent symptoms were treated with gum opii in balls, morphia and atropine hypodermically, hot rugs, etc. The horse drank several times during the night.

At about seven o'clock on the following morning, in the presence of the horsekeeper, he distinctly vomited, covering a wall and window sill with the fluid thus returned. The horse was in a standing position at the time, and died in about an hour afterwards. I called in the course of the morning, and saw for myself the evidence upon the wall and window as above described.

On *post-mortem* examination, a small perforation of the rectum was discovered, with inflammatory surroundings. A calculus of the rapidly formed " clinker " variety, weighing 4 lbs. 2 ozs., was found in the colon, but apparently without having caused any pathological change. The stomach contained about a gallon of fluid. The calculus from the rectum was somewhat cuboidal in shape ; the angles were well defined and roughened—one of them particularly so ; it measured $4 \times 3 \times 2\frac{1}{2}$ inches, and weighed 6 ounces.

Editorial.

MEDICAL MEETINGS AND CONGRESSES.

This year has been more than usually prolific in interesting gatherings of medical men, among whom, of course, we include veterinary surgeons, and the results should have an important influence on the progress of medicine, and especially on what has been designated State or Public medicine. A notable feature in these meetings, has been the larger amount of attention paid to matters which largely concern the veterinary profession, and the fact that one congress, originated by its members, was composed of some of the most distinguished medical and veterinary authorities in Europe, whose deliberations extended over nearly a week, and were limited to only one subject, but that one of the most serious, perhaps, which has ever been discussed by either branch of medicine—viz., Tuberculosis.

The meeting of the National Veterinary Association at Newcastle-on-Tyne had one-fourth of its time occupied in discussing the communicability of some animal diseases to mankind; while at that of the British Medical Association held at Glasgow, in the Section of Public Health the same subject was discussed by medical men and veterinary surgeons, and in a manner worthy of its importance.

The most noteworthy of these meetings, however, so far as the public are concerned, was undoubtedly that held at Paris for the purpose of considering Tuberculosis from a medical and sanitary point of view. The discussions were of a most interesting character, and the conclusions arrived at were of the highest moment with regard to the public health. It is satisfactory to find that this disease has at last received the attention its seriousness so well deserved, and that the veterinary profession, which has made the subject more especially one of its own, should now be so strongly supported by medical men in calling for legislative interference for its control, so that the public health and wealth may not longer suffer from its widespread ravages. For now many years we have persisted upon the recognition of Tuberculosis as a scourge to animals and a source of peril to human beings, and for a long time we stood alone in this country in insisting upon the great danger the community incurred through consuming the flesh and other products of tuberculous animals; and we are therefore all the more gratified that not only does the medical world discern the danger, but that legislators are at last bestirring themselves to do their duty, and aid us in stamping out a most formidable plague.

These meetings of the members of the two branches of medicine also augur well for the future progress of comparative pathology. We have long complained of its neglect, especially in this country, and have dwelt strongly on the loss this neglect has inflicted on human and animal medicine. Now a brighter day is dawning, and the twin sisters of the healing art will assuredly both reap the advantage of recognising their relationship, and combining to promote the more rapid development of their sacred calling.

HORSE-SICKNESS IN SOUTH AFRICA.

In the Journal for January (p. 38), we published an interim report on the above disease, from Veterinary Surgeon J. A. Nunn, Army Veterinary Department, who was sent specially to study it. The following is his final report, which, like the other, possesses much interest.

To the Principal Veterinary Surgeon to the Forces.

Pietermaritzburg, Natal, 13th June, 1888.

Sir,—In continuation of my former report on South African Horse-sickness, dated September, 1887, I have the honour to forward, for your information, the following additional notes and remarks on that disease.

These remarks are founded on information I obtained during my tour through the Cape Colony and Basutoland in the summer of 1887-88, and the further experiments I made in Pietermaritzburg during the past autumn; and although I regret to say that they are not of a very practical nature, and merely confirm my previous opinion that Horse-sickness is not Anthrax and is not communicable from one animal to another, they may, perhaps, be of some interest, especially as I believe I have traced a further development of a hitherto undescribed micro-organism. The total number of cases in Natal amongst the Government animals during the past unhealthy season, is shown in the return marked "Appendix A," in which is also given the places where animals were attacked.

The first case occurred in Natal on 13th February, at Durban, and the last on 1st June, at Ekoujeui, in Zululand. The first case in Pietermaritzburg occurred on 20th February, and the last on 29th April. The number of cases and mortality in the different corps is also given in the table, by which it will be seen that the greatest loss was with the transport mules in Zululand and on the Coast-road in Natal; but Veterinary Surgeon Raymond, A.V.D., informs me that all these cases that came under his personal observation had been down on the low-lying malarious districts on the coast, and in the river valleys a short time previously. The number of cases, 69, compared with those of last year, viz., 240, is small, and is, in my opinion, entirely attributable to climatic causes. The mortality percentage is, however, greater, but it can be accounted for by most of the cases occurring amongst the transport mules working on the Coast-road to Zululand, and being attacked at small roadside places without any appliances, and probably only a native driver to look after them.

The tables in "Appendix B" give the different temperatures, rainfall, and state of the barometer for the months from January to February 1887 and 1888, copied from the meteorological observations taken at the hospital at Fort Napier, Pietermaritzburg, and for which I am indebted to Surgeon Major Coates, M.S., who kindly placed them at my disposal.

Although I am of opinion that the cause of immunity this year is due to climatic reasons, still precautions were taken with the Cavalry and Royal Artillery animals, which were not allowed out till after about 7 a.m., dry grass was used for bedding, all grazing was stopped, and dry oat-hay issued instead. The existing stables, which were formerly open sheds of sheet iron, were closed up. These stables are shown in the plan marked "Appendix C," the original portion being in indian-ink; the additional in yellow. This addition consisted of a shutter on hinges, which lifted up and down so as to completely close the opening. The plan shows the ridge ventilation, which was also made to allow the escape of the foul air. The block plan shows the stables to which these shutters were fitted marked in yellow, in the others old horse blankets were fastened into the open space as a substitute. These blankets and shutters were fastened up at 5 p.m. and not opened till 7 a.m., only twenty-six animals being kept in each stable, giving to each a total space of 1,200 cubic feet.

With material obtained from the few cases that occurred in Pietermaritzburg, I made a series of inoculation experiments and cultivations. The former were completely destitute of result, merely confirming those of last year. I made a cultivation in beef peptone broth from blood in which was the usual bacillus. This I kept at the temperature of the room for seventy-two hours, when a profuse growth had taken place. I injected forty minims of the cultivation into the trachea of a horse, puncturing the trachea with the needle of the syringe between two of the rings; but beyond a very slight rise in the temperature, there has been absolutely no result. I found that if the blood of an animal which had died from Horse-sickness, and in which the characteristic bacillus was present, was collected in sterilized capillary tubes or freshly-made glass pipettes, and hermetically sealed, after the lapse of from sixteen to twenty-four hours after death the strings or chains of bacilli split up and separated, each bacillus then presenting somewhat the appearance of a tadpole, having a bright spot at one end looking like a head. Some, but not many, had this spot at either end, giving it somewhat the appearance of a life-preserver in miniature. The tail or shaft took on the stain in a uniform mass, but the spore or head is, I am inclined to think, round, for the centre appeared as a bright spot, colourless, with a faint belt or ring of colour round it. This effect I obtained with an alcoholic solution of Spiller's purple, also with Bismarck brown prepared after Woodhead's formulæ ("Practical Pathology," page 71). This peculiar spore formation, I found, invariably took place in blood preserved in this way, and I think that the same takes place in the body, for in the epizoötic of 1887, in one case in which the blood was collected for me sixteen to twenty hours after death, I found micro-organisms of exactly the same appearance and which at the time misled me very much; as although the case presented at the time all the usual appearances of Horse-sickness in its continued form, the microbe present was totally different to the bacillus I had previously seen. I could detect no sign of motion in the fluid, either during or after this development, although I repeatedly looked carefully for it. With the help of Veterinary Surgeon Raymond, I made a number of tube cultivations, both in beef broth and on "agar-agar," some plate cultivations on gelatine, and also on potatoes, bananas, and pine apples, both of which latter are easily obtainable in Natal; but I could never get the same spore formation that I did in the blood kept in the tubes, although I watched them carefully, but only the minute bacillus and micrococcus I obtained last year, and which in inoculation experiments failed to have any results. In passing, I would remark that, although I found the banana to be an excellent cultivation medium, on pine apples I failed to get any growth at all, which I attribute to the fact that the juice of this fruit has a strong acid reaction, which appears to be antagonistic to this particular microbe. On gelatine plates at the temperature of the room, I found that after the lapse of about twelve hours a peculiar yellowish white, cloudy growth took place, which then spread rapidly, burrowing into the substance of the gelatine, liquefying it, and giving its surface a very worm-eaten appearance. After the lapse of about twenty-four to thirty-six hours, during which time the growth rapidly increases, distinct flocculi or detached pieces of the yellowish white mass break off and float freely about in the liquid gelatine. These flocculi then gradually break down as well, until, finally, after about the fourth or fifth day the cultivation resembles a dip or hollow in the gelatine, with a milky white fluid filling up the pool. I found that the same appearance and growth took place, no matter whether the original sowing was made with fresh blood containing the bacillus, or from blood in which the spore formation had commenced. These experiments were all made at the temperature of the room, as from my experience of last year I found it utterly impossible to regulate the temperature of the incubator without gas, to five, or even ten degrees. I did

attempt to grow cultivations at a regular heat this year, but with the result that one of my lamps, holding nearly a quart of oil, exploded, nearly blowing me up, and setting the whole laboratory on fire. After this I did not think it advisable to make any further attempt in that direction. In fact, as I have previously stated, in an undertaking of this sort it is useless to attempt much without a good and constant supply of both gas and water.

That Horse-sickness is due to climatic causes, I am still of opinion; and in addition to the facts mentioned in my former report, I must now make the following additional remarks. It is well known in the Cape Colony that at one time Horse-sickness was as prevalent as in Natal, and mention is made of its prevalence both in the records of the old Cape Mounted Rifles, and in several reports and pamphlets on the subject that have been published by the Colonial Government from time to time. From these documents, which I obtained access to in Cape Town, it would appear that the disease was universal all over the Colony, except to the northward of Cape Town, on the West coast about the Picquetburg District, the Berg River, and Saldhana Bay, which places, even when the great epizoötics of 1833 and 1852 were at their height, entirely escaped. The immunity of this particular strip of country I attribute to the influence of the Antarctic current running up the Coast, which I gave a map of in my former report.

For the last thirty years, except a few isolated sporadic cases, there has been comparative freedom from Horse-sickness in the Cape Colony, and the following are the reasons that, in my opinion, account for this. It is pretty well universally admitted in the Cape that the character of the herbage on the Veldt has changed, and that most sheep farms have been over-stocked. It is also well known that during wet weather the rivers rise much more suddenly, subside quicker, and that the floods reach a higher level than they did formerly. About thirty years ago or thereabouts was the time that the wool industry commenced, and merino sheep were largely bred and imported into the Colony. From this large profits were made, and in consequence farms were much over stocked.

The chief herbage of the South African Veldt is the Karoo Bush, which is a small shrub about a foot or eighteen inches high, under which, shaded from the heat of the sun, a crop of grass grows. This the sheep fed off, biting it down to the ground in the manner in which these animals graze, and the farms being over-stocked the roots of the grass were destroyed, and hence the change in the pasture. In former times, before this took place, the herbage sucked up the rain when it fell, like a sponge, retaining it in the ground; which, when acted on by a powerful sun, gave rise to the miasma causing Horse-sickness, in the same manner as occurs in the more luxuriant pastures and valleys of Natal. When this grass was destroyed, not only was there less material for retaining the moisture, but the constant passage of the sheep over the land formed what are so well known to any one who has been on the South Downs and other sheep-breeding countries, as sheep walks; and, in reality, the whole country is now covered with a series of open surface-drains. These sheep walks collect the rain, which is drained down into the ravine and watercourses, instead of remaining to be soaked into the earth, and in this way the change of flood-level in the rivers can be accounted for, as well as the alteration in the climate.

It may also be worthy of remark, that the number of cases of fever among human beings is much greater in the South African autumn than at any other time of the year.

A list is given, marked "Appendix D," of a number of animals—ten horses and thirty mules—which I inoculated in June, 1887, with Pasteur's No. 1 and No. 2 vaccine obtained from Paris. These were all animals belonging to the Transport Department, and were taken from that corps; as I thought that,

being moved about all over Natal, they would afford a better test than animals of one corps or regiment always in one place. From the annexed return it will be seen that, out of a total of forty animals inoculated against Anthrax, up to the present, four mules have died from Horse-sickness at the dates given in the return, and that all were working between Durban and Zululand.

During the investigation of Horse-sickness, what I have reason to believe is a hitherto undescribed bacillus affecting the lungs of the horse, came under my notice; and although I am sorry to say I have not had an opportunity of proving it, still I think that there is every probability of its being specific, and that it is more or less connected with a peculiar progressive form of Pneumonia that at one time was almost epizoötic in Natal. I have never seen a case during the time I have been in the Colony, neither could I hear of one, although I have made diligent inquiries. The specimen of lung from which I cut the sections was given to me by S. Wiltshire, Esq., Colonial Veterinary Surgeon, and had been obtained by him from a horse that died about September, 1886, when the disease was epizoötic at the Police Post of Krans Kop, on the River Tugela; where between thirty and forty horses, belonging to both private persons and the Natal Mounted Police, died. As described to me by Mr. Wiltshire, the horse appeared to gradually waste away, losing condition, with a cough, but with no loss of appetite or alteration in the pulse. The progress of the disease lasted, I believe, from a few days to several months, the animal dying from sheer debility. The line of demarcation of the diseased from the healthy tissue was, during life, very clearly marked on auscultation. The lung, which had been preserved in a solution of corrosive sublimate when given to me, presented somewhat the appearance of a portion of cow's udder. The pleura was much thickened and adherent to the organ, the parenchyma being intersected with a number of fibrous bands, varying in breadth from a few lines to $\frac{1}{16}$ of an inch, running all over it in no particular direction. When stained with Ranvier's Picrocarmine, there was seen to be irregular consolidation of tissue in patches, with cell proliferation into the walls of the alveolæ, which, by the increasing thickness of the walls, became gradually obliterated. These patches were distributed all over the organ. In some, but not many, of the smaller bronchii there were casts, but these did not entirely fill up the tube, there being a space or margin round them, but it is possible that the reason of this is that the cast has shrunk, owing to the length of time the lung had been preserved. When stained by Gram's method with iodine, the bacillus I have mentioned was rendered visible, taking on a deep blue, almost black colour, which was rendered more prominent when the matrix was stained with an alcoholic solution of resine. This bacillus is a small rod-shaped body, about three or four times longer than it is broad, and much smaller than a red blood-corpuscle; but as I have not a micrometer with me I am not able to give the exact measurements, but trust to be able to do so on my return to England. The bacilli are not uniformly distributed all over the tissue, but in patches; in places they are single, that is to say, there are inter-spaces with a small portion of tissue between each individual microbe, and in others they are in clusters, large, many of them together in patches. Where these patches are, the deep blue colour they assume is most striking, especially if the section is doubled stained with resine. I tried a number of other re-agents and methods of staining, but Gram's was the only one by which I could demonstrate it. Of course, without cultivation in inoculation experiments, it is impossible to state positively that this bacillus is the same, or even connected in the most remote manner, with the disease; but in all probability it is. At all events, in this particular case there is an organism present which is not there under normal conditions, and that there is something specific about it, is proved by its only becoming visible when stained by one particular method; and as of course you are aware, without a fresh

case from which material could be obtained it would be impossible to make these experiments. This I regret to say I could not do, for although I inquired far and wide, I was unable to hear of a single case during my stay in Natal.

During the autumn, what is commonly known as South African distemper, is very prevalent and fatal with dogs, especially adult animals imported from England, which are almost certain to be attacked during the first year they are in the country. I have, from the result of a number of cases, come to the conclusion that, although it somewhat resembles European distemper, it is nothing more than a continued fever of a somewhat peculiar type, running in periods of seven days, when a crisis takes place. During the attack the temperature rises to 104 or 109 deg. F., with a regular variation night and morning of about two deg. I merely mention this fact to show that, at this time of year, there is some peculiar atmospheric condition exerting its influence.

In concluding this report, I must tender my best thanks to Veterinary Surgeons, 1st Class, Rowe and Crawford, A.V.D., the former of whom, as Senior Veterinary Surgeon in Natal, gave me every assistance in his power, and without whose hearty co-operation I could not have carried out this inquiry; while the latter greatly assisted me in making *post-mortem* examinations and noting cases. Veterinary Surgeon Raymond, A.V.D., also gave me valuable aid in the sickly season of 1888. That officer having gone through a special course of instruction in Bacteriology in England, was able to confirm and carry out many observations for me which I should not otherwise have been able to do; as my eyesight has been so injured by the microscope work I did in the Horse-sickness season of 1887 in Natal, that I cannot now look through the instrument for any very great length of time.

My thanks are also due to Surgeon-Major J. Coates, M.S., who kindly placed the Meteorological observations taken at the Military Hospital, Fort Napier, Pietermaritzburg, at my disposal, and to S. Wiltshire, Esq., Colonial Veterinary Surgeon, who gave me much valuable information and collected a number of specimens for me.

I have the honour to be, sir,

Your most obedient servant,

(Signed) JOSHUA A. NUNN,

Veterinary Surgeon 1st Class, Army Veterinary Department.

APPENDIX A.

Corps.	Cases.	Deaths.	Recoveries.	Date of First Case.	Date of Last Case.	Place.				Mules.	Horses.	Remarks.
						Pietermaritzburg.	Durban.	Rorke's Drift.	Zululand.			
6th Dragoons.....	3	3	—	Mar. 10	May 18	2	—	—	1	—	3	
H 4 R.A.....	2	2	—	Feb. 28	Mar. 31	2	—	—	—	1	1	
Mounted Infantry, Inniskilling Fusilrs.	2	2	—	Feb. 25	April 22	1	—	—	1	—	2	
Mounted Infantry, N. Stafford Regt....	5	5	—	Mar. 20	May 22	—	—	2	3	—	5	
Transport Corps ...	57	57	—	Feb. 13	June 1	3	17	—	37	53	4	
Total	69	69	—	—	—	8	17	2	42	54	15	

APPENDIX B.—*Meteorological Chart.*

1887.	Jan.	Feb.	March.	April.	May.
AVERAGE TEMPERATURE, 9 A.M., LOCAL TIME.					
Dry Bulb	71·8	73 2	69·5	67·7	61·8
Wet Bulb	66·2	67 3	65·2	63 1	59·1
AVERAGE TEMPERATURE, 3 P.M., LOCAL TIME.					
Dry Bulb	76·9	74·9	74·1	72·7	69·2
Wet Bulb	69·7	69 7	67·0	63 8	60 7
RAINFALL.					
Average number of inches	·21	·40	·34	·6	·03
Average duration of hours	·70	2·0	1·75	·4	·4

1888.	Jan.	Feb.	March.	April.	May.
AVERAGE TEMPERATURE, 9 A.M., LOCAL TIME.					
Dry Bulb	71·8	73·3	68·4	68·4	60·7
Wet Bulb	64·1	67·2	63·0	62·2	54·1
AVERAGE TEMPERATURE, 3 P.M., LOCAL TIME.					
Dry Bulb	74·4	78·8	72·4	74·7	69·4
Wet Bulb	65·8	70·4	65·2	65·8	56·7
RAINFALL.					
Average number of inches	·2	·42	·21	·09	·04
Average duration of hours	3·0	1·9	1·91	·9	·62

APPENDIX B—*continued.—Meteorological Chart.*

1887.	Jan.	Feb.	March.	April.	May.
Highest reading of barometer	30·027	30·022	30·244	30·178	30·291
Lowest do. do.	29·518	29·562	29 651	29·602	29·560
Highest temperature in shade	100·8	96·0	90·0	89·0	82·5
Lowest do. do.	54·5	50·5	47·0	38·5	40·0
Highest temperature in sun	152·4	148·0	145·0	135 8	116·8
Lowest do. do.	49 0	40·0	41·5	31·5	30·8

1888.	Jan.	Feb.	March.	April.	May.
Highest reading of barometer	30·119	30·060	30·243	30·176	30·092
Lowest do. do.	29·522	29·631	29 625	29·612	29·549
Highest temperature in shade	100·4	95·0	95·0	93·5	86·0
Lowest do. do.	51·2	50·0	42·0	50·5	38·5
Highest temperature in sun	157·4	148·4	142 8	134·0	140·5
Lowest do. do.	43·0	46·0	32·0	40·0	30·5

APPENDIX D.

Description and number of animals inoculated with Pasteur's Anthrax vaccine.

No.	Colour.	Sex.	Remarks.
Horses 489	Bay	Mare	
465	,,	Gelding	
451	Chestnut	,,	
482	Bay	Mare	
404	Grey	Gelding	
455	Bay	Mare	
479	,,	Gelding	
433	Grey	,,	
303	Bay	,,	
187	,,	,,	
Mules 2183	,,	,,	Died of Horse Sickness at Etchowe, Zululand, 12th February, 1888.
106	Mouse	,,	
99	Dark bay	Mare	Died of Horse Sickness at N. Noujeni, Zululand, 4th May, 1888.
54	Bay	,,	
118	Brown	Stallion	
2636	Bay	Gelding	
119	Mouse	Stallion	
89	Dark brown	Gelding	
108	Brown	,,	
110	,,	,,	
36	Light brown	Mare	
84	Dark ,,	Gelding	
32	,, bay	Stallion	Died 29th July, 1887.
1771	,, ,,	Gelding	
92	Brown	,,	
111	,,	,,	
93	,,	,,	Died of Horse Sickness at N. Tongenani, Zululand, 10th February, 1888.
91	Dark brown	,,	
94	Light bay	,,	
114	Brown	Mare	
120	,,	,,	Died of Horse Sickness at Durban, Natal, 30th April, 1888.
44	Dark brown	,,	
10	,,	Gelding	
68	,,	,,	
736	Brown	,,	
2708	,,	,,	
82	Dark brown	,,	
1849	Brown	Mare	
2667	,,	Gelding	
25	,,	,,	

ON THE MODE OF ACTION OF THE CONTAGIUM AND THE NATURE OF PROPHYLAXIS IN SOME INFECTIVE DISEASES.

BY G. F. DOWDESWELL, M.A.

(*Continued from page* 105.)

That no general conclusion can be drawn from the mode of action of a pathogenic or prophylactic agent in any particular instance is shown by the kindred case of the acetic fermentation, when the same result is produced by two widely different agents—viz., either by the action of a living organism, the *mycoderma aceti*, or as easily by the mere "contact action" of an insoluble and inorganic substance, spongy platinum; but if such a substance by its mere presence in this case can effect the chemical decomposition of the molecule, it is surely not difficult to conceive that the actively metabolic cells of living microbes, the contagium of infective disease, can as readily exert an influence on the delicate cells of the tissues and pre-eminently sensitive nervous elements. This view, therefore, of functional adaptation or acquired toleration of the action of a virus appears the most probable explanation of the cause of prophylaxis or insusceptibility to an infective disease, such as Variola, Anthrax, or Chicken Cholera, by the *previous* action of a modified virus; it might, too, be supposed to apply to the case of protection against the effects of *previous* inoculation with a virulent contagium when the latent period is prolonged, as in subcutaneous inoculation with Street Rabies, where the protective virus, as employed and advocated by M. Pasteur, though modified and attenuated by partial desiccation, is yet of materially shorter incubation period than the former, though unmodified, and may be conceived so to act as gradually to inure the tissues of the animal to the action of the more virulent; but this cannot be supposed to apply to the case of intracranial inoculations with virus of the same character and intensity.

M. Pasteur's view of the *modus operandi* of his modified virus in Rabies appears to be that in inoculations with it *after* infection it acts in precisely the same manner as in those made *previously* to infection, but that it develops more rapidly than the lethal or unmodified virus—"the one which is living"—the fatal microbe—the action of which, "when present in sufficient quantities," it inhibits. This view, *per se*, offers nothing contradictory or impossible, but it is inconsistent with the measures adopted—viz., a graduated series of progressively less modified, or more virulent, medullas, so as *gradually* to inure the subject to the action of the unmitigated and most virulent, which obviously implies a physiological action of the modified or attenuated virus itself, not that of a chemical or unorganised antidote, as the theory of M. Pasteur requires, according to which it would have been requisite to have employed, whether once for all or repeatedly, a "sufficient quantity" of the antidote at its state of maximum development, and the lethal, "organised" virus at its *minimal*, without using medullas containing the latter, but little, if at all, modified. The practice thus contradicts the theory, and one or other falls to the ground.

There is, too, another circumstance that creates a difficulty in accepting the view of the occurrence of any prophylactic action in these inoculations for Rabies, which is that in all other cases, as in Variola, Anthrax, etc., when protection or immunity from subsequent infection is conferred, it is by exciting an abortive or modified form of the disease; but here, neither after inoculation with the so-termed modified nor with the unmodified virus, either in the dog, or in those and exceptional cases in the rabbit when they are not fatally infective, are there any appreciable symptoms of disturbance, so that there appears equal difficulty in accepting this view of prophylaxis as that of M. Pasteur of the action of an antidote or counter poison, and the most that

can be said is that the disease is one *sui generis;* and if the occurrence of an induced immunity from, or an increased refractoriness to, infection be accepted, it must be admitted that we are as yet in complete ignorance of the mode of action, and that the case is altogether anomalous.

It may well be, however, that in different infective diseases the action of the virus or even its nature may be different; in one case its pathogenic action may be mechanical, as by causing embolism, or by deoxidising the tissues, when the microbe is present in overwhelming numbers throughout the blood; in another, when absent from that fluid, as in Tuberculosis and in Rabies, where the blood is not usually infective, it most probably acts in a totally different manner. Similarly, the *modus operandi* of protection in different diseases may be diverse. It is remarkable how little attention this subject—of the nature of the virus, and its mode of action when modified and unmodified—has received; and yet, if the methods of prophylaxis and therapeusis are to be anything but empirical, it is the basis on which they must be founded. For this reason I have dwelt at some length upon this point.

It is somewhat singular that at the present time, and within a very short period, articles have appeared by three different writers, denying in effect to micro-parasites any etiological relations to disease. It is quite superfluous now to repeat the evidence of their direct pathogenic action in some few cases, the proof of which was first completed with logical conclusiveness in the case of Anthrax by Dr. Robert Koch upwards of ten years ago, and must be universally known. Possibly the utterance of these opinions arises as a protest against the tendency, which has become too apparent, greatly to exaggerate the number of cases in which it can be shown that microbes have any casual relation to the diseases in which they appear, and which tendency has brought bacterial pathology into some disrepute, though these mistaken observations or statements do not affect those cases, few in number though they be, in which their relations are conclusively shown. Partly also perhaps it may be due to a feeling of disappointment with the *practical* result of work upon this subject. It was reasonably hoped that, when the active cause of infectious disease was demonstrated, a certain basis for its remedial treatment would be afforded; this hope has been utterly disappointed. Increased attention to sanitary measures has, it is true, to a great extent mitigated the prevalence of some of the most dreaded epidemic and epizoötic diseases, but it has done so perfectly irrespective of the results of micro-pathological investigations, and any conclusions as to the nature of the contagium. Amongst these disease, Asiatic Cholera and Enteric Fever, which has been rightly termed "the scourge and the opprobrium of civilisation," have both yielded in great measure to sanitary precautions, and these diseases are amongst those of which we are as yet in absolute ignorance of the nature of the contagium. In France, indeed, in the epizooties, Fowl Cholera and Anthrax, methods of prophylaxis have been perfected by Toussaint, Pasteur, and others, as the result of scientific experiment and microbial investigation, and, it is understood, are practised and found successful upon a large scale; but in this country they have been contemned and discouraged by a memorandum of the Privy Council, which regards them as practically useless and liable to propagate the virulent disease.

It has lately been said by a most eminent authority in medicine and pharmacology, in relation to the action of bacteria, that the future of medicine will be rather preventive than remedial; but experience as yet goes to show that this consummation must be rather due to general matters of sanitation than to any conclusions founded upon ætiological or microscopical investigation*. This disappointed expectation is strikingly exemplified in the

* Somewhat singularly, however, the same authority endorses the conclusions of Professor Rosenberger that injection of a chemical poison (sterilised septic blood)

circumstance that the demonstration by Koch of the micro-parasite of Tuberculosis, which discovery has been characterised as one of the greatest achievements in medical science of the present age, has been utterly unproductive of the very smallest improvement in the treatment of the most dire disease prevalent in this country. Beyond that, too, the result of experiments upon the lower animals is directly at variance both with clinical observation and daily experience; and if it be admitted that the microbe is in a strict sense the efficient cause of Tuberculosis when inoculated in man as in some of the lower animals, there must be a third factor, as yet unrecognised, in the natural means of infection by this disease; were it not so, it is obvious that infection would infallibly follow from any protracted communication with a tuberculous patient, a result which, in the majority of cases, is contradicted by everyday experience. Quite recently, too, it has been shown, as is asserted, in two different investigations, that in Scarlatina a microbe is the *materies morbi;* and yet, as if to demonstrate the practical inutility of these investigations, we are immediately upon the statement visited by as severe and unmanageable an outbreak of this disease as has occurred for many years.

As a further instance of the extreme confusion and conflicting views prevailing on this subject may be adduced the case of Swine Fever, in which different observers—as Klein, Pasteur, Loeffler, and Salmon—have described totally distinct organisms as constituting the contagium; and whatever may be the explanation of this, it is quite obvious that the results and conclusions published on this point are worthless. This is disappointing enough, and demonstrates that the result of these investigations is directly antithetical to the object of the experimental method inaugurated by Bacon, which was "humanis commodis inservire," as opposed to the previous philosophy of the schools, the futile and selfish aim of which was to exercise the mind in the pursuit of abstract truth. But, even from a theoretical or merely scientific point of view, the results of the last ten years' laborious investigations are equally disappointing. In no case (not even in the best known

will produce a disease in the rabbit, with the presence of a micro-organism, which has been regarded and demonstrated, as conclusively as in the case of Anthrax, to constitute the efficient contagium. The result of this conclusion, stated explicitly by Professor Rosenberger (Centralb. f. d. Med. Wiss., 1882, No. 4, p. 65-69), is to deny any casual connection with the diseases in which they appear to microbes, and to regard them as merely adventitious or "epiphenomenal." It is not requisite here to discuss the particular case, which I have already done (Proc. Roy. Soc., 1882, No. 221), but I adduce it as an instance of the present chaotic position of opinion upon this subject; and if these conclusions be accepted, as showing that these micro-pathological investigations, or those on the action of antiseptics or other agents upon microbes that have been regarded as pathogenic or parasitical, are futile, and no conclusions in either preventive or remedial medicine can be founded upon them: I am far, however, from questioning the general proposition that modifications of its environments, such as impaired vitality of the tissues, do affect the development of many so-termed pathogenic microbes. This was shown conclusively many years ago by M. Chauveau (Bull. Acad. Med., 1873, p. 523, etc.) in experiments upon Bistournage in rams, with results that must be familiar to every student of micropathology, though there has appeared to be a tendency with some writers lately to represent this old-established conclusion as new; whilst the most recent experiments upon this point—those of MM. Arloing, Cornevin, and Thomas—do but confirm, if they somewhat extend the original conclusions of M. Chauveau. But what I deny explicitly is that in a true micro-parasitical disease, such as Anthrax, or the case here in question, Davaine's Septicæmia in rabbits, where the blood is the seat of the contagium, the specific microbe, as asserted by Rosenberger, is present normally in the blood, or can be produced or enabled to develop in that fluid by the action of a sterilised chemical substance. In the case of Anthrax, however, similar assertions have been made by Professor Semner, of Dorpat, and his pupils (Centralb. f. d. Med. Wiss. 1884, p. 401, etc., *et ubique*). Their results have obviously proceeded from the same cause as those of Rosenberger—viz., imperfect sterilisation of the fluids injected—and they have rightly received no credit.

micro-parasitical disease—viz., Anthrax) is it finally demonstrated or generally agreed what the *modus operandi* of the contagium is, and the general position of the subject cannot be said to have advanced beyond that described by Dr. Burdon Sanderson* just ten years ago.† I will only add, with respect to Rabies, that, unsuccessful for 2,000 years as have been all remedial measures hitherto tried, I can see no reason to conclude that effective treatment may not be practicable when we have acquired a competent knowledge of the intimate nature of the virus and its mode of action.

P.S.—The views herein expressed of the unsatisfactory position and uncertain results of bacterial pathology, have quite recently, and since the above was written, received a striking confirmation by the conclusions at which Dr. Crookshank has arrived, in continuation of the opinion he shrewdly but guardedly expressed in the last edition of his "Bacteriology" (second edition, 1887, note, p. 201). From an exhaustive examination of many different investigations in this field, he brings the sweeping charge against several writers of having described as the active contagium in upwards of twenty different cases a common ubiquitous saprophyte, the streptococcus pyogenes. In at least many of the cases so carefully collated, there is certainly strong probability of his conclusions being well founded; and the fact that such an assertion could possibly be made by a competent bacteriologist shows conspicuously the fundamental ignorance that prevails upon the subject, and that such investigations conducted upon the prevailing methods are not merely useless, but misleading. This charge cannot be ignored or slighted, and if unanswered and unrefuted will constitute nothing less than a grave scandal. The cause of this prevailing obscurity and confusion is obvious; it arises from the neglect of, or inability to recognise, the specific characters of form and habit in the microbes regarded and described as pathogenic in these cases; in some instances—though to specify them would be invidious—inattention to these microscopical features has resulted in organisms which, comparatively speaking, are conspicuously dissimilar, being regarded and described as one and the same. This specific diagnosis should obviously form the basis of all reliable micro-pathological investigation, in the place of a restless anxiety to publish new and sensational results, however crude—as indeed, I endeavoured in numerous places for several years to inculcate. To do this is by no means impossible, with competent observation and adequate appliances; and if it continue to be neglected these investigations will remain useless, inconclusive, and misleading.

THE PASSAGE OF MICROBES FROM THE MOTHER TO THE FŒTUS.

THE greater number of infectious diseases are now regarded as capable of being transmitted from the mother to the fœtus, and numerous facts, clinical and anatomical, have been recorded, which prove that the germs of Variola,

* The *Lancet*, Dec. 29th, 1877, p. 968.

† The method, however, of prophylactic inoculation for Anthrax and for Charbon Symptomatique (Quarter-evil) in sheep and cattle, by intravenous injection of small quantities of unmodified virus, as first recommended by M. Chauveau and by Messrs. Arloing, Cornevin, and Thomas respectively—since adopted and employed upon a large scale by the practical genius of M. Pasteur—is said to have been investigated at the Royal Veterinary College and found to be successful, whilst the methods of inoculation with a modified or attenuated virus have been unsuccessful. Though the first method may be termed scientific, I should rather consider it empirical; it is at least absolutely independent of the nature of the virus, and of any bacteriological investigations; indeed, in the latter disease (Charbon) the nature of the contagium is not yet conclusively demonstrated; the microbe which appears in animals so infected does not appear to constitute *per se* the true *materies morbi*, as in the case of the bacillus of Anthrax, where the blood is the seat of infection.

Syphilis, Tuberculosis, Scarlatina, Measles, Glanders, Pneumonia, Erysipelas, Recurrent Fever, Anthrax, Typhoid Fever, and Cholera may overcome the barrier formed by the placenta, and infect the embryo; and, on the other hand, the experimental transmission to the fœtus of the microbe of Symptomatic Anthrax and Fowl Cholera inoculated into rabbits, the Septikæmia of rabbits, Pyæmia, the so-called "Rouget," and Tuberculosis. In every case, it is true, the micro-organisms found in the fœtus were relatively few; but their presence, nevertheless, showed that we cannot regard the placenta as a perfect filter, protecting the fœtus under all circumstances against bacillary invasion.

In favour, however, of the authorities who maintain the contrary opinion, it is only just to note the small number of cases observed, at least for certain diseases; for we know, for instance, that the Anthrax bacillus very rarely passes from the mother to the fœtus.

M. Malvoz has published, in the *Annales de l'Institut Pasteur*, the results of the researches undertaken by him to solve the much-discussed problem, and to discover the conditions of a transmission which might present itself with very marked contingent characters. The conclusions of this authority are to the effect, that the passage of micro-organisms through the placenta is dependent upon anatomical lesions of that organ, that such transmission cannot be considered a constant fact, and that it is as variable and inconstant as the properties of the parasitical elements themselves.

Thus the placental alterations, inconstant in Anthrax and variable from one species of animal to another—which explains the apparently contradictory results obtained by experimentalists—should, on the contrary, be the rule in such diseases as Symptomatic Anthrax, and especially Fowl Cholera, in which transmission of the microbe to the fœtus has been pretty constantly observed. If such conclusions are applied to maladies such as Variola, Tuberculosis, Pyæmia, etc., it will be seen that the fœtus is imperilled every time there occurs any alteration likely to break down the cellular barriers of the placenta: a hæmorrhagic point, so frequent in Variola; softening of a nodule in Tuberculosis; a purulent focus in Pyæmia. And in evidence of this, it has long been remarked that Variola in the pregnant woman always manifests itself in the hæmorrhagic form, a circumstance which explains the placental lesions and the already numerous instances of transmission of the disease to the fœtus.

The anatomical observations of M. Malvoz have convinced him that, in a condition of integrity, the placenta, like the kidneys, is a perfect filter. But in the majority of infectious maladies, the accumulation of the microbes in these organs and their proliferation *in situ*, tend to produce rupture of blood-vessels, which breaks the perfect barrier formed by these organs, and thus opens doors of entrance for the micro-parasites into the fœtus, when the placenta is involved. But then it is by effraction, and not by filtration, that these parasites penetrate, and this circumstance is sufficient to explain the inconstancy of the phenomenon.

TRANSMISSION OF STRANGLES FROM THE MARE TO THE FŒTUS.

At a recent meeting of the Société Centrale de Médecine Vétérinaire of Paris, it was stated that M. Choisy, Veterinary Surgeon to the 10th Cuirassiers, had sent to the Society the organs of a foal which died a few minutes after birth. The lungs and the small intestines and their lymphatic glands were the seat of numerous lesions, apparently neoplastic, whose nature a macroscopic examination could not decide. The mother of the foal had been affected with

Strangles during the period of gestation. Professor Nocard made a careful examination of them and reported the result. The idea of a neoplasm—such as Cancer, Sarcoma, Epithelioma, or Lymphadenoma—was not entertained. Koch's bacillus was not found, neither was that of Löffler; therefore the case had not been one of Tuberculosis or Glanders. But in having recourse to Weignert's method of staining with two colours, he recognised in the degenerated masses which filled the pulmonary alveoli or infiltrated the intestinal mucous membrane, the presence of an enormous quantity of isolated micrococci, geminated or associated in short chains. It is now known that the pus of Strangles lesions constantly contains a similar micrococcus, which can be cultivated, and by means of which Professor Schütz, of Berlin, could produce Strangles in horses which had not been previously affected by that disease. It was therefore very probable that the lesions examined by Nocard were those of Strangles, and that this was the first case of the kind observed.

At a subsequent meeting of the Society, Professor Nocard said that, contrary to what he had previously stated, Glanders had been already observed in the new-born foal, and M. Martin, in an "Etude sur la Pyogénie Spécifique appelée Gourme du Cheval" (Bayeux, 1887,) had written: "When a mare foals within fifteen days after her recovery from Strangles, the foal at birth has the disease of which its mother appeared to be cured when it was born. This virulent heredity is very frequently fatal to the foal, which dies exhausted by the abscesses that multiply on all parts of its body." But Nocard remarks that Choisy's case was different, as the lesions, besides their special characters, were all internal.

PREVENTIVE INOCULATION FOR ANTHRAX.

M. Rossignol, veterinary surgeon at Melun, France, under whose auspices, it will be remembered, the first practical and startling demonstration of the value of Pasteur's system of protective inoculation for Anthrax was made, has lately been conducting some new experiments in the same direction, a report of which appeared in *L'Avenir* of June 10th. For several years Rossignol had found it absolutely impossible to inoculate, at the proper time, herds which were in jeopardy from attacks of Splenic Apoplexy, because no "vaccine" could be obtained from Pasteur's laboratory from August 1st to October 15th, the period when the risk of the disease is greatest.

A deadly outbreak which occurred amongst the herds and flocks of a farmer in his vicinity last year, convinced Rossignol that some means should be adopted to remedy this omission, and he determined to try a new "vaccine" made by means of compressed oxygen by M. Chauveau, of the Institute, Professor at the Museum, and Inspector-General of the French Veterinary Schools. This "vaccine" was tried on the stock of the farmer alluded to, under the auspices of the Agricultural Society of Melun and the Society of Practical Veterinary Medicine, on May 5th, and the results were pronounced satisfactory, taking into consideration the facts that the trial was made during an epizoöty of the disease, and that the material had been prepared nine months. The arrangements for the trial were made in concert with M. Chauveau, and were as follows: (1) Fifty sheep were to be bought for the purpose. (2) Ten of these were to be inoculated for the *first time* on May 5th, with the virus attenuated by means of compressed oxygen, and a *second time* ten or twelve days afterwards. (3) Ten other sheep to be inoculated for the first time with the same virus, on the day when the first lot received their second dose. (4) Twenty sheep to be inoculated with the classical "vaccine" of Pasteur, the inoculation with the first "vaccine" to be made on May 5th, and the second at the same time as that on which Chauveau's two lots were to be operated on. (5) Ten or twelve days later the forty sheep of

the Chauveau and Pasteur lots were to undergo a test inoculation with very virulent Anthrax virus. (6) Ten uninoculated sheep were to be inoculated at the same time with the same virulent virus.

On May 5th, in the presence of a large number of veterinary surgeons and agriculturists, the twenty sheep of the Pasteur lot were inoculated with the first "vaccine" on the inner surface of the left thigh, by means of a Pravaz syringe. The Chauveau lot of twenty sheep were divided into two sections, of ten each. The first section of Chauveau's lot received as much of his prepared virus as would have sufficed for twenty sheep, as from the long time it had been kept he was apprehensive that it was too attenuated. On the following days the temperatures of these sheep indicated a certain amount of fever, and on the third day one of the Chauveau section died; the autopsy showed that death was due to the inoculation.

On May 19th, M. Chauveau, several veterinary professors, practitioners, and agriculturists, were present when Pasteur's lot received their second vaccination. The first Chauveau section received also a second inoculation with the same virus as on the first occasion. The second section were likewise inoculated, but the dose of virus was only one-half of that used for the other section. The consequent febrile condition was more marked than before in the Pasteur lot and the first section of the Chauveau lot; a Chauveau sheep of the second section died on May 27th, eight days after the operation. Subsequently M. Chauveau held a conference, at which he explained that the principal object he wished to attain under the present conditions, was to prove that his prepared virus would retain its activity for several months, which is not the case with Pasteur's, the duration of which is absolutely ephemeral. Chauveau's virus had been already successfully employed in the most distant colonies, and the Swiss veterinary surgeons had advantageously employed it without the slightest accident resulting. The accident which had occurred at this trial indicated that vaccine more than two months prepared should not be employed, as beyond that time it regained a certain activity which might cause untoward results.

On May 31st, the forty-eight sheep (twenty of the Pasteur, and twenty-eight of the Chauveau lots, and ten test sheep) were inoculated with virulent Anthrax virus obtained the previous evening, before a large number of witnesses. On June 1st the sheep did not appear any the worse, but on the morning of the 2nd one of the test animals was found dead, and in the evening two more died, presenting all the symptoms of Anthrax, and bacilli were found in their blood. On June 3rd two more test sheep succumbed, and next day two more. The remaining three were very ill, but ultimately recovered.

All the sheep inoculated with the virus prepared by Pasteur and Chauveau alike resisted the test inoculation, and if the success had been less with the Chauveau virus, it was nevertheless proved that it could confer immunity when prepared more than three months—a very important point.

M. Rossignol draws the following conclusions from the trial: (1) That they are a new triumph for Pasteur's method. (2) It is a matter for regret that agriculturists cannot derive any advantage from the method except for two and a half months. (3) The "vaccine" prepared by compressed oxygen (Chauveau's procedure) possesses incontestable prophylactic properties. The immunity conferred by it is as substantial as that given by the Pasteur "vaccine." (4) Chauveau's "vaccine" possesses, among other precious advantages, that of preserving its activity intact during several months, of conferring immunity after one inoculation, and may be sent long distances, so that it may be employed uninterruptedly at all times. (5) The two failures that occurred in the trial demonstrate the utility of a new experiment being made with a virus prepared for more than a month. If, as Chauveau affirms, the virulence is attenuated in a precise and invariable manner during the first two months

after its preparation, there will be a considerable advantage; for Pasteur confesses that his second "vaccine" may, when it is inoculated, kill fifty per cent of the animals, and veterinary surgeons who use it consequently incur great risks, which is not the case with Chauveau's "vaccine." (6) The "vaccine" obtained by the aid of compressed oxygen in not causing in cattle and horses the œdemas too often observed in the Pasteurian inoculations, experiments should be made on the horse, and if they are successful recourse could then be had to this "vaccine" instead of that of Pasteur, which is not always satisfactory, as it very often gives rise to considerable swellings which are sometimes followed by death. (7) The doses of Chauveau's virus have been too great, and only one drop should be inoculated in the sheep, two to four in horses and cattle.

PROTECTIVE INOCULATION FOR ANTHRAX IN SOUTH AMERICA.

A CORRESPONDENT to an agricultural contemporary sends the following interesting account of experiments for the prevention of Anthrax in the Argentine Republic:—

"In consequence of very serious losses from Anthrax that we were suffering on a sheep and cattle farm in the province of Entre Rios, in the Argentine Republic, in which I am interested, we, some three years ago, got Dr. Roy to go out there and satisfy us as to the nature of the disease that was devastating the flocks and herds to the extent of over one per cent. per month, for months at a time. He at once pronounced the disease to be (what we had, of course, suspected, namely) Anthrax, and he endeavoured to prepare a vaccine through the animal called a 'biscache' there, and through guinea-pigs, mice, etc., with which we supplied him. After a few months he returned to England, having been unable to prepare a vaccine that would protect our animals. In this strait, and as our animals continued periodically to die in large numbers, we arranged with the laboratory of M. Pasteur to furnish us with an operator and the necessary supply of vaccine in tubes, and this person repaired to Buenos Ayres to work under our orders. He, however, managed to embroil himself with the authorities there, who placed a strict injunction on our practising, on the plea that we were about introducing a new disease into the country. For the best part of two years we debated this point with the authorities, cattle and sheep dying all over the Republic of the disease the whole time; at last, however, we were successful, and we got permission to make the experiments on our own estancia (sheep-farm), under the supervision of a person named by the Government as an expert, whose orders were to report the result to the Government as soon as complete. These experiments were duly made this time last year, and were of so very convincing a nature that when the result was reported the Government at once gave us permission to practise; and as I see the disease is becoming common in England, or rather, perhaps, is becoming more commonly acknowledged, whilst I have not seen in any of the reports so far any recommendation made to adopt or even to try M. Pasteur's vaccine, I venture to relate our experience.

"Our belief is that the disease is much more fatal in sheep than in cattle; but it should be observed that the poisoned blood with which we endeavoured to infect our cattle was sheep blood; and although I don't know why the blood of cattle was not used to infect cattle, I think the experiment would perhaps have been more conclusive on the cattle had blood from their own species been used.

"The experiment on the sheep is too remarkable to need any comment from me, and will speak for itself. The operations began on May 14th, 1887, and ended on June 24th, 1887, and were witnessed by the delegate expert named by the Argentine Government, our own manager, the operator from

M. Pasteur's laboratory, and no less than ten of the neighbouring sheep and cattle farmers, who all signed the diary of what took place, and which diary formed the basis of the report upon which the Argentine Government subsequently acted in giving us the permission to practise, and it is from that diary that I quote the following facts:—

"'May 14th, 1887.—25 steers, 1½ to 2 years old, 25 heifers or young cows, 2½ years old, 19 mares were vaccinated, some with No. 4 and some with No. 6 (two different preparations) of M. Pasteur's vaccine.

"'May 27th, 1887.—All the above animals were revaccinated with the corresponding second qualities, and this completed the protecting process.

"'June 18th, 1887.—The above 50 beasts and 19 mares were inoculated with Anthrax virus.'

"Forty-seven of the beasts were inoculated with virus whose killing power had been satisfactorily tested beforehand, and whose power will speak for itself. When I come to the sheep experiment, which was made with the same virus, it was made from sheep's blood prepared and tested in a laboratory in Buenos Ayres. The mares were inoculated with the same. The remaining three beasts were inoculated from the fresh blood of a sheep that had died of Anthrax this morning (June 18th) on the farm.

"'June 24th, 1887.—The whole of these animals, cattle, and mares never sickened, were alive and well this day, when the experiments ended, and continued well afterwards.'

"As against the above experiments, and to prove their efficacy, on—

"'June 18th, 1887, 37 steers, 10 cows, and 10 mares were inoculated with the tested sheep's blood, like the protected animals above described (3 of the steers, however, were done with the fresh sheep's blood collected this day).'

"Of these animals—

"'June 21st, 1887, 1 steer died of Anthrax.
" 22nd, " 3 " " "
" 22nd, " 2 cows " "
" 23rd, " 2 " " "

"And besides the above casualties, a large number (not given in figures) were ill the whole time, some of them dangerously so—*i.e.*, in a very high state of fever, described as 'violent.' After the 23rd the animals alive recovered gradually, and no more deaths were reported.

"None of the mares died, but all were highly fevered and swelled at the point of inoculation.

"We now come to the sheep experiments:—

"'May 14th, 1888.—48 wether sheep, two years old, were vaccinated with M. Pasteur's Nos. 4 and 6 vaccine.

"'May 27th, 1888.—The above 48 sheep were revaccinated with the corresponding second qualities of vaccine, thus completing the protective powers.

"'June 18th, 1888.—Of the above, 40 were inoculated with the poison virus from the tubes prepared in Buenos Ayres; 3 were inoculated with the blood of the recently expired sheep alluded to; 5 were put on corn diet, over which half a tube (50 doses) of the active virus was twice mixed during the week of trial.'

"With the exception of a slight increase in the temperature on June 20th in some of these animals, the whole of the 48 continued well and hearty until June 24th, when they were discharged sound in every way (and continued so, as far as I know).

"'May 27th, 1888.—10 more wethers besides the above were vaccinated (only once, observe), and with Pasteur's second quality of vaccine only.

"'June 18th, 1888.—9 were inoculated with the active virus from the tube, the other one having died on May 31st, apparently from Anthrax, but whether acquired from the inoculation or from having had the disease at the time (it being prevalent) cannot be ascertained.'

"The nine continued well and hearty until June 24th, when they were discharged as sound.

"'June 18th, 1888.—20 unprotected wethers were inoculated with the tubed virus, 3 unprotected wethers were inoculated with the blood of the freshly dead sheep already twice alluded to, and 5 were put with the previous 5 sheep on the poisoned food.'

"Of the above 28 animals—

"'June 19th, 1888.—19 died of Anthrax.

"'June 21st, 1888.—1 died of Anthrax.

"'June 22nd, 1888.—3 died of Anthrax.'

"Which accounts for the whole of the 23 that were inoculated. The history of the remaining five fed on poisoned corn I cannot distinctly trace, but I should gather that the corn had not affected them."

STRONGYLUS PARADOXUS.

M. J. CHATIN recently exhibited before the Paris Académie de Médecine, a specimen of this intestinal worm, passed by a butcher, at Oloron, in the department of the Basses-Pyrénées. The patient had been subject for some time to gastro-intestinal disturbance, and had already passed another specimen of the same parasite. *Strongylus paradoxus* is a small round worm; the exhibited specimen measured a little over half an inch. The species was discovered in the lung of a wild boar, by Ebel, at the end of the last century, shortly after, Modeer and Bremser discovered in Sweden and Vienna that this *Strongylus* infected the bronchial tubes of domesticated swine. Rayer found the parasites, in the same anatomical situation, in a pig in the Paris Market in 1844; two years later Bellingham discovered the parasite in Ireland. For long, experts have admitted that *Strongylus paradoxus* infests the lungs of swine, causing an affection which was rare till recently. Dr. Cobbold, in 1879, and M. Chatin, in 1881, both showed that swine were becoming more subject to this worm. The former pointed out its danger when a large number of worms collected in the bronchi. In 1850 the wild boars preserved for the Royal hunt, near Berlin, were decimated by this *Strongylus*. M. Chatin notes that no report of the existence of this species in man can be found in medical literature, but the alleged new species, *Strongylus longevaginatus*, found investing the lungs of a child, aged six, at Klausenburg, Transylvania, in 1845, is evidently, in M. Chatin's opinion, identical with *Strongylus paradoxus*. Hence, in reality, the latter species has twice been found in man, and on the first occasion it infested the lung and caused death. The worm is very tenacious of life, and its embryo may remain in water, or completely dried up, for a year without undergoing any change; yet, if then swallowed by a pig in fodder or drink, it will rapidly develop and propagate. M. Chatin believes that in the case at Oloron the parasite was probably swallowed in drinking water. Since swine are becoming more and more subject to *Strongylus paradoxus*, he thinks that sanitarians must be watchful, lest man should become frequently subject to the ravages of a worm liable, from its favourite habitat, to cause more mischief than can be wrought by *Tænia*, *Oxyuris*, *Lumbricus*, or even the leech-like *Dochmius duodenalis*, which caused anæmia amongst the men employed in the St. Gothard Tunnel.

THE INTERNATIONAL CONGRESS ON TUBERCULOSIS.

THE meeting of the Congress to discuss the question of Tuberculosis, and which was announced in this Journal some months ago, took place at Paris on July 25th, and sat for a number of days. To a correspondent who was present we owe the following report of the interesting proceedings, the record of which begins on the 25th July. He writes:—

When it is considered that no disease has a more general distribution or claims more victims than does Consumption, one cannot but hail with satisfaction the meeting of the Congress of medical men and veterinary surgeons which assembles in Paris to-day to devote a week to the study of human and animal Tuberculosis. The Congress has been organised by a committee, of which Professor Chauveau, member of the Institute and Inspector-General of the French Veterinary Schools, is President, and Professor Villemin, member of the Academy of Medicine, Vice-President; the other officials being M. Butel, veterinary surgeon, etc.; M. Leblanc, veterinary surgeon and member of the Academy of Medicine; Professor Stocard, Director of the Alfort Veterinary School; M. Rossignol, veterinary surgeon; MM. Cornil, Grancher, Lannelongue, Verneuil, Professors to the Faculty of Medicine, Paris; and Dr. L. H. Petit, General Secretary. The list of subscribers to the Congress has just been published, and contains the names of about three hundred of the most eminent physicians and veterinarians of the European continent. It is surprising to find that in this long list the names of only three gentlemen from Great Britain—two physicians and one veterinarian—are to be found. It may be well to point out that this apparent apathy on the part of our countrymen is, unfortunately, not, as might be supposed, due to an absence, or even to a lesser prevalence, of the disease in Great Britain. It is to be hoped, however, that the public of this country, who have lately shown considerable interest in the subject, will follow with attention, and profit from, the deliberations of the Congress. Sixty-five communications have been announced by various well-known authorities, embracing the different aspects of the subject —such as modes of diffusion of the disease; its prophylaxy and treatment. Due prominence is given to the part of the subject of most interest to the public—viz., the dangers incurred by the use as food of the flesh and milk of tubercular animals, and other dangers attendant on the conservation in our midst of well-defined cases of Phthisis in cattle.

It is gratifying to observe, in the pages of the *Recueil de Médecine Véterinaire*, that the French Government are about to add Tuberculosis to the list of the diseases included in the Contagious Diseases (Animals) Act, and it is to be earnestly hoped that our Government may be induced, with the least possible delay, to adopt a like measure. The great difficulty—indeed, one may say the absolute impossibility—of diagnosing the disease in its early stages, and more particularly in those cases in which the *post-mortem* microscopic lesions are only detectable in the abdominal organs, has been the only consideration restraining the French Government hitherto from this most judicious action. It is more than probable that they have been influenced in their present action by two important considerations, viz.:—First, that in the stages or conditions of the disease in which its diagnosis is impossible, the chances of its dissemination by the living animal are at a minimum, if not altogether nil; and second, that when the animals have attained a condition favourable to the dissemination of the disease, the improved methods of examination have made the diagnosis in most cases easy, and in almost all possible.

For the present it will be sufficient to indicate, with respect to the Congress, that its sittings commence this morning at 9 o'clock in the small amphitheatre of the Faculty of Medicine by a meeting of members for confirmation of rules and appointment of office-bearers, etc.; at 3 p.m., the public meeting of inauguration in the large amphitheatre of the Faculty of Medicine; at 9 p.m., reception of members of the Congress by the Committee in the Council Hall of the Faculty of Medicine. The officials are desirous that it should be known to members of the medical and veterinary professions, who have not enrolled themselves, and who may still be desirous of doing so, that arrangements will be made on their arrival in Paris for their reception and participation in the proceedings of the Congress.

July 25th.—There assembled this morning the numerous adherents of this Congress, in the small amphitheatre of the *Faculté de Médecine.* After classifying the communications, so as to facilitate as much as possible the dispatch of the business of the Congress, the election of office-bearers was proceeded with, which resulted as follows:—M. le Dr. Chauveau, President; and MM. Villemin and Verneuil, Vice-Presidents. The questions to be discussed were the following:—I. The dangers which accrue from the use as food of the flesh and milk of tubercular animals. The means of preventing them. II. The respective aptitudes for the development of Tuberculosis of man, animals, and organic media. III. Modes of introduction and of propagation in the economy of the tubercular virus. Prophylactic measures. IV. Early diagnosis of Tuberculosis in man. IV. (bis.) Early diagnosis of Tuberculosis in animals.

At the afternoon meeting Dr. CHAUVEAU, on taking the chair, delivered a long and eloquent speech, of which the following is a synopsis:—Having alluded to the special importance of the subject the members of the Congress were assembled to discuss, he pointed out the vast distribution of Tuberculosis, dwelling upon the fact that no class was exempt from its ravages, nor any civilised country free from its effects. The countries formerly exempt were those into which Europeans had not penetrated, but in which the natives could now count amongst the blessings of civilisation the introduction of Consumption. He pointed out that this prodigious extension of Tuberculosis in itself merited all the interest inspired by the disease, but that a greater and more powerful motive demanded the attention and interest of the meeting in this subject, viz., that we now know the principal cause of the excessive multiplication of Tuberculosis, and were justified in the hope of being able to considerably limit its ravages. This hope was created in scientific minds when it was proved that the disease propagated itself by germs after the manner of virulent and contagious diseases. This great fact was a contemporaneous conquest of recent date, although the idea of contagion was by no means a new idea. The celebrated Morgagni was often cited for his faith in the virulence of Tuberculosis, and for his repugnance to the *post-mortem* examination of tubercular subjects. The popular instinct in southern countries had never ceased to believe in its transmission by contagion, by intimate contact with the consumptive, the use of their linen, or the clothes habitually worn by them. The medical world of our own day, however, was far from participating in these views. To it, Tuberculosis appeared to be a spontaneous creation in an organism, the victim of physiological misery, either hereditary or acquired under the influence of bad hygienic conditions, privations, usage, or disease. Faith in the contagion of Tuberculosis had entirely disappeared, and the old world had quietly settled into an opinion from which it did not seem likely to be disturbed, when suddenly the declaration was made—"Tuberculosis is contagious; it has its proper virus, and that virus is as certainly inoculable as the virus of no matter what disease, shown to be thoroughly virulent." The pathological world did not at once bow to the evidence of the demonstration which had been thus brought to its notice. After long and acrimonious discussion the scientific truth is established, and "who to-day would contest the virulence of Turberculosis?" Dr. Chauveau then paid a high tribute of respect to Professor Villemin, to whom the honour belongs of having first demonstrated the virulence of Tuberculosis. He spoke of the pleasure it had given him to be the first to bear witness to the value of the discovery. After tracing the different phases of the discussion raised in opposition to M. Villemin's experiments, in which the principal objection taken was to the unnatural manner by which the infection was produced (inoculation), he referred to his own experiments, giving proof of infection by a

natural mode (ingestion), and spoke of the pleasure it gave him to point out to the academic judges that they had neither properly appreciated nor properly rewarded M. Villemin for his work. These experiments on infection by ingestion were reported to the Academy of Medicine by Dr. Chauveau in 1868. It was shown by these experiments that the introduction of the virus by the natural channel produced the disease more rapidly and more completely than did its deposition into the subcutaneous connective tissue. It is now twenty years since the completion of these experiments. At that time Professor Chauveau was engaged in the solution of the problem of the physical conditions of virulent agents, as the result of which he succeeded in proving that the infectious properties did not reside in liquid or soluble substances, but in figured elements. These results he arrived at by the comparative inoculation of filtered and unfiltered tubercular humours. The demonstration of the corpuscular nature of the virus was in reality the first step in the actual discovery. When later the animated nature of the corpuscles was placed beyond doubt, their cultivation outside of the animal economy was attempted on the lines on which, by this time, the cultivation of the Anthrax organism had been found to succeed. M. Toussaint was the first to make known the positive result of the inoculation of his cultures, and Professor Chauveau having witnessed these experiments was able to testify to the success of his inoculations with cultivations at a considerable distance from the first generation. Toussaint, however, did not recognise the real agent of the tubercular virus, which honour was reserved for M. R. Koch. Having paid a high tribute to M. Koch for that and other pathological work, and having justified the name given to the organism, Koch's bacillus, on the ground that no one ought to be robbed of the honour of such a discovery, the President asked why the same honour should not have been shown to M. Davaine for his discovery of the Anthrax bacillus, which was really the starting point of the whole microbiological science? It would surely only be right to commemorate the event by conserving for it the name of Davaine's bacillus. The ravages of Tuberculosis are not confined to the human race, but also play the greatest havoc with the domesticated animals, more particularly with cattle, one of the species most intimately associated with the life of civilised people, and furnishing the greater part of our milk and meat supply. For long these dangers were ignored; it was not easy to get a recognition of the grave risks to which human lives were exposed. The prevalent idea was that the bovine and human diseases were distinct. At this time the differentiation of neoplastic diseases was for the most part based on pathological anatomy. The great authority of Virchow materially contributed in confirming the prevalent opinion. The exposure of the great German authority's error commenced with the experiments of Professor Villemin, but was ultimately definitively demonstrated by his countryman M. Koch in his discovery of the bacillus. It was, however, at the Lyons Veterinary School, where healthy young animals of the bovine species were fed with human tubercular matter (in which all became affected), that the identity of the disease was first demonstrated. After further illustrating the identity of the disease in man and animals, and dilating on the difficulties necessarily existing in the absolute determination of pathological problems relatively to the ease and certainty existing in the solution of the problems in mathematics, physics, and the other sciences, Professor Chauveau concluded with the hope that since the publication of the excellent works of M. Pasteur on the ferments, we may be permitted to hope that, as they have definitely introduced into pathology the part played by the infinitely little, the pathologist may one day be able to render his work as easy as that of the naturalist, as precise as that of the physician, and as fertile in rigorously deduced laws as that of the mathematician. Meantime we must be content with being useful

which is a noble end to assign to labour. That which has been devoted to Tuberculosis has been particularly fruitful. The experimental and comparative pathology work must continue. If it succeeds in formulating rules for the diminution of this terrible scourge, if it succeeds in augmenting the duration of life and happiness on earth, it will have rendered to the individual and to society a singularly good service. M. VERNEUIL then gave the members of the Congress a cordial welcome, and remarked that although this was certainly not the first time that doctors and veterinary surgeons had united in the collaboration of scientific work—mentioning the work of Bouley and Brouardel, and the Encyclopædia of Dechambre—it was, however, the first time they had met together *en masse* for the determination of a scientific question. Having inaugurated this new departure, it was to be hoped that the question of Tuberculosis would soon be determined, and that, continuing in this good path, they would continue to meet for the solution of important questions in connection with other diseases, such as Diphtheria, Septicæmia, Parasitism, Tetanus, etc. He then proceeded to give details on the origin of the Congress, from which it appeared that it was due to the solicitations of a country practitioner in veterinary surgery, M. Butel, of Meaux, who first entertained the idea of a reunion of the professors and practitioners of both professions for the study of the disease. He terminated his discourse in words of which the following is an almost literal translation :—"Sirs, if I mistake not, the present is a day of good augury, and of which you will retain a pleasant remembrance, for to-day in France, at Paris, this modern Babylon, we loudly proclaim the unity of the medical science, we further proclaim the equality of those who cultivate it, and we show the fraternity which exists among all its representatives."

Professor CORNIL then made a most interesting communication on the contagion of Tuberculosis by the mucous membranes, and detailed his experiments on guinea pigs, animals which present the greatest susceptibility to the disease. From them it would appear that, after the placing in the pharynx of a single drop of the liquid culture of the "bacillus Tuberculosis," naked eye lesions were found extending along the whole alimentary tract on the animal being killed fifteen days later. M. NOCARD next read his interesting communication on the dangers arising from the use of the milk and flesh of tubercular animals, and detailed the measures which the Government were about to put in force for the public's protection. These the meeting received with signs of dissatisfaction.

July 26th.—The discussion on Professor Nocard's communication was opened this morning by Professor ARLOING, Director of the Lyons Veterinary School. The point of particular interest was the manner in which he dealt with the experiments which M. Nocard had made and brought forward in support of his advocacy of the partial condemnation of animals in which the lesions appeared to indicate localised tubercle. He showed that experiments with the expressed muscle juice of only a limited part of a carcase could not be accepted, in the event of their failure to communicate the disease, as demonstrative that the whole carcase was sound. If, he said, the experiments of others operating in exactly the same conditions were taken into account, it would be found that they had succeeded in communicating Tuberculosis to the guinea pig in a much larger proportion. Thus, if Professor Nocard's experiments were added to the others, it would still be found that the percentage of cases in which the inoculations succeeded was very considerable. Nothing was more common than to find people eating meat from which blood could be expressed, and it was perfectly well known that the temperature in cooking could not have reached in the bleeding portion of such meat 60 degs. C., which temperature was totally insufficient for the destruction of the infectious agent. It was, therefore, a matter of necessity, in the interest of the public

health, that tubercular animals should be totally rejected. M. Arloing further insisted on the necessity of veterinary inspection of slaughter-houses in the smaller as well as in the larger towns. It was necessary that all animal food should be inspected, for animals of a suspicious kind would always be sent to those places in which there was either no inspection at all or where it was carried out with least rigour. Dr. BANG, of Copenhagen, spoke in the same direction as Professor Arloing, and added a most interesting communication on the infective properties of the milk of consumptive women and of tubercular cattle. He showed that for the destruction of the bacillus even in the liquid medium (milk) it was necessary to submit it to a temperature of 75 degrees Centigrade, and that for not less than five minutes. M. BAILLET, veterinary surgeon, Inspector of Meat at Bordeaux, was of opinion that meat as an agent of transmission of the disease played a very minor part, and that too severe measures were prejudicial to agricultural and commercial interests, and approved only of the condemnation of cases in which there was generalisation of the disease. M. BUTEL, the promoter of the Congress, strongly condemned the opinion and action of M. Baillet, and insisted that the interests of commerce and agriculture were of less importance than the welfare of the general public. He believed, however, that proper sanitary measures could not be universally adopted without money, an indispensable condition being to provide compensation for the persons whose animals were seized. As to the milk, M. Butel agreed with the opinion already advanced, that there should be a special veterinary supervision of dairies, inspection of the milk of suspected animals, and their slaughter and destruction (chemically) on the suspicion being confirmed. Animals under suspicion should meantime be separated.

At the afternoon meeting the discussion was continued, when the President called upon Mr. ARCHIBALD ROBINSON, of Greenock, who said that it had not been his intention to take part in the discussion, but that, as the members of Congress would probably be asked to vote on the question of partial or total condemnation, he desired permission to say a few words. He should commence by telling them the practice that had been followed in the town from which he had come to take part in their brilliant discussions. Since 1865 his father had been in the habit of condemning all tubercular animals, except those in which the disease existed to the most limited extent, and in these he rejected the internal organs and viscera. He had himself had the privilege of witnessing the experiments of Professor Saint-Cyr at the Veterinary School of Lyons in 1873 and 1874, and on his return to Scotland in the latter year, had made representations to the municipality, with the result that all animals, no matter how slightly affected, were condemned absolutely. From careful examinations during the last fourteen years, he considered himself justified in affirming that in his part of the country at least localised tubercle, if such could indeed be pathologically considered to exist, was altogether exceptional. In cases where the lesions appeared internally to be confined to the mesenteric glands he had found the external iliac glands affected, and in cases in which the lung lesions did not present the appearance of long duration, he had frequently found the prescapular lymphatic glands invaded. Nothing had more surprised him than to hear the Inspector of Meat for Paris declare that veterinary surgeons in their official capacity should not have definite opinions, but should act according to distinct regulations laid down to them. In the absence of these definite regulations, it was his (Mr. Robinson's) opinion that no one was more qualified to form an opinion than veterinary surgeons, whose duty it was to have very definite opinions and to exercise these opinions so as to cause them to prevail with the municipality for which they acted. In view of the action which would probably be shortly taken in England, he urged on the Congress, if a vote was taken, not to take a step so retrograde as to countenance

partial condemnation. He could assure the Congress that if he had thought that there was the most remote chance of such half measures being adopted he would not have travelled so many miles to be a party to them. Far better that a hundred carcases should be lost than that a single human being should be infected with Tuberculosis, particularly considering the ulterior consequences to his family and other persons with whom he might come into intimate contact. As the public were the individuals to benefit from these condemnations, he considered that the expense of compensation should be met by universal taxation. Mr. Robinson's remarks evidently met with approval on the part of almost all the members of Congress; and after a number of others had given expression to similar views, the following resolution was carried, three members only dissenting:—

"Science having demonstrated that Tuberculosis can be transmitted from animals to man by the ingestion of meat, it is necessary to adopt total seizure of the flesh of infected animals, and to compensate the proprietors of the meat seized."

M. PEUCH, Professor at the Toulouse Veterinary School, gave an account of a number of interesting experiments which he had undertaken with meat and milk of tubercular animals, and enlarged on the legislative measures necessary to deal effectually with the disease. M. SOLLES gave the details of experiments he had made with tubercular matter from the human lung, which showed that the animals (rabbits) inoculated succumbed, some to Erysipelas, some to Septicæmia, and some to Tuberculosis. From these experiments he concluded that human Phthisis was frequently a multiple infection, and could, on transmission, assume a variety of forms. M. BOULANT gave a statistical table of Tuberculosis in the different districts of Limoges; and MM. KALINDERO and CHAMBERLENT treated the subject of tubercular meningitis, the first in the adult, and the second in women during pregnancy, after which the proceedings terminated.

On the morning of July 27th, a large number of the members met in the laboratories of MM. Strauss and Cornil for the anatomical and bacteriological study of the lesions of Tuberculosis. M. Cornil submitted the progressive lesions to the microscopic examination of the visitors, and answered all the interrogations with the greatest patience and amiability. M. Strauss exhibited a number of fowls which had for varying periods been fed on tubercular expectorations, and while admitting that cases of fowl infection were not rare, showed that, experimentally, fowls frequently exhibited an absolute immunity from infection by ingestion. This he confirmed by killing two of the fowls, and making a *post-mortem* examination of them in presence of the members. One of these fowls had been fed for over a year on tubercular expectorations, and the other for ten months. The first, he computed, must have swallowed over a hundred pounds weight of tubercular matter, the infectiousness of which had been from time to time proved by the infection of guinea pigs both by inoculation and ingestion. These fowls presented all the appearances of health, and were in capital condition. Their *post-mortem* confirmed the outward appearances. Notwithstanding the most minute examination of almost all the members present, not a single tubercular lesion was to be found. The Museum of Hygiene was next visited, where Professor Proust and Dr. A. J. Martin demonstrated the advantages of the more recent systems of ventilation and drainage of private houses and public buildings. Professor Proust, for the benefit of the members, had specially collected in the Museum a complete series of utensils for the disinfection of the expectorations of phthisical patients, their garments, the vessels and, indeed, everything which they used or came in contact with, and also appliances for fumigating and disinfecting the rooms. A special apparatus driven by the hand, and projecting a carbolised or other disinfectant spray,

was exhibited as that adopted at the Parisian hospitals for disinfection of the walls. This series of appliances, which for the present are to be found only in Paris, awakened the liveliest interest on the part of the visitors, who seemed thoroughly gratified with the instruction they had received in the laboratories of MM. Strauss and Cornil, and in the Museum. The visit to the latter had been rendered most instructive by Professor Proust's illustrations and explanations of the application of the sanitary appliances.

At the meeting in the afternoon, the President read a letter received from, and signed by, the committee of the members of a Commission formed in Sweden for the study of Tuberculosis. This letter set forth that the Commission was appointed at the Congress of Swedish doctors of 1887, and that the Paris Congress would learn with pleasure that the questions which were the object of its studies were equally the objects of study in Sweden. The Commission had issued a list of questions to all the doctors in the country, requiring information as to the age, the profession, and the domicile of all their patients suffering from any form of Tuberculosis, and indicating as far as possible the cause in each case (heredity, contagion, from man to man, by milk or by flesh), and if the Tuberculosis had been preceded by Scrofula. The veterinary surgeons had also received a list of questions on the subject of Tuberculosis in cows, its causes, if it had been found affecting the teats ; and if they met with Tuberculosis in pigs, etc. The Commission hoped that these documents would indicate what could be done to combat Tuberculosis. In distributing among the doctors special scientific works, the Commission hoped to induce them to closely study the disease, and desired further, by popular writings which were in contemplation, to draw public attention to the nature of Tuberculosis, and the dangers to which it exposed individuals and society. The Commission felicitated the Congress on having made this important question the object of its studies, which it would follow with the greatest interest.

Dr. DE BRUN, Professor at the Faculty of Medicine at Beyrout (Syria), referred in his paper to the antagonism which seemed to exist between malarial infection and Tuberculosis. The natives of that country, he said, are almost exempt from Tuberculosis ; on the other hand, tubercular subjects, whether sent for their health on account of the mildness of the climate, or contracting the disease after their arrival in the country, develop the disease with a rapidity of evolution quite unknown in France. The importation of the disease to Syria coincides with the augmentation of the population and the draining of the country, and it may be affirmed that Tuberculosis only made its appearance on the disappearance of malaria. Persons in comfortable circumstances, and least exposed to malaria, are those in whom Tuberculosis is mostly seen.

M. PIOT, veterinary surgeon at Cairo, had made similar observations in Egypt to those of M. de Brun in Syria. The negroes living in the south are most subject to Tuberculosis. In animals, Tuberculosis is rarely met with, but in the cases which do occur the evolution of the disease is of an extreme rapidity.

Dr. REDARD related the success he had had in cases of tubercular disease of the articulations in children, by incision with the thermo-cautery, scraping, drainage, antiseptic resection, and antiseptic baths. He insisted that in children recovery could always be effected by these means.

M. VERNEUIL supported the remarks of Dr. Redard, whose opinions were those which he himself had long maintained. He advocated conservative principles in dealing with the tubercular articulations of children, insisting particularly on sterilisation of the pathological centre before bringing the knife into operation. For after treatment, antiseptics and immobilisation were usually sufficient to induce recovery. He desired particularly, however,

to impress upon his audience that these happy results could not be anticipated in adults.

MM. CHANTEMESSE and VIDAL communicated a series of interesting experiments, showing the length of time the bacillus Tuberculosis and its spores retained vitality in water taken from the Seine, the result being that in water previously sterilised, and maintained at a temperature of from 8 to 12 degs. C., they continued alive for fifty days. In water similarly dealt with, but kept at repose, they were still alive at the end of seventy days.

M. ARLOING stated that MM. Galtier and Cadiac, of Lyons, had made experiments with the same object. M. Galtier placed tubercular fragments in running water in which the temperature varied from 15 degs. to 6 degs. C. With this treatment the tubercular fragment had conserved all its virulence at the end of fifteen days. M. Cadiac found that in running water virulence was conserved for a month and a half, and that in water at repose virulence was proved by successful inoculation after 120 days' submersion. An inoculation 123 days after submersion gave a negative result. M. Arloing, in speaking of the means capable of preventing the extension of the disease, said, reflecting on the results obtained from extirpation of the chancres and neighbouring lymphatic ganglia in Syphilis, he endeavoured by similar means to arrest the development of Tuberculosis. When the guinea pig is inoculated with tubercular virus, it invades step by step the ganglia from a peripheral inoculation towards the centre. Thus, if a guinea pig be inoculated in the thigh, the ganglia of the groin are next affected, then the sublumbar, then the ganglia of the thorax, until at last generalisation takes place, with infection of the lungs and other organs. After inoculating several guinea pigs in the subcutaneous tissue of the thigh, he daily examined the animals to determine the exact moment at which the ganglia became affected. Finding that on the seventh day there was still no enlargement, he excised the ganglia, and the glandular tissue which accompanies them in these animals, in two of the subjects. The ganglia appeared quite healthy. Finding slight enlargement on the fifteenth day in three of the subjects, he excised the enlarged ganglia. He reserved two subjects as test animals. Two and a half months later he made a *post-mortem* examination of the seven guinea pigs under experiment. In all, the first as well as the last, the viscera were filled with tubercular nodules. Thus, notwithstanding the preventive eradication of the ganglia, generalisation of the disease had taken place in all the animals alike. He inoculated two other animals with tubercular products from a human lung; then five days later he removed the ganglia of one of the animals; these ganglia appeared healthy except one, in the centre of which there was a small red spot. Two months and a half later the *post-mortem* revealed tubercular generalisation. The excision of the glands had not in the slightest degree arrested the evolution of the disease. M. Arloing then proceeded to consider whether immunity might not be acquired from inoculation, and reminded his audience that for a moment it had been anticipated that scrofular products might furnish the desired attenuation. He had, however, practised the inoculation of scrofulous material to the guinea pig; then, as soon as the scrofulous condition had been induced, he inoculated tubercular material. The evolution of the tubercular process was of an astonishing rapidity, and was in no way arrested by the primary injection of the scrofular material. Without being able to hope that preventive inoculation of an attenuated material would ever be found to endow the animal with immunity, might we not, he asked, be permitted to hope by impregnating the system with another modified virus, as M. de Brun had shown in the case of malaria, to be able to endow the system with immunity? Typhoid Fever having been regarded as antagonistic to Tuberculosis, he had commenced experiments in that direction. As the guinea pig showed a wonderful

resistance to typhoid inoculation, he endeavoured to produce a typhoid impregnation of the system by hypodermic inoculation for six days of typhoid products. On the eighth day he inoculated eight guinea pigs, and other two non-impregnated animals as proof subjects. This was done on the 29th of June last. The *post-mortem* of these animals was made on the 25th of July. All the animals were tuberculous, and he had just learnt from his assistant that those which had undergone the typhoid inoculations were affected in a more intense degree than the proof animals. Notwithstanding this failure, it was necessary to continue these experiments, for it would not be astonishing for them one day to discover a virus which by its presence in the organism would give immunity from Tuberculosis. It was only necessary to recollect that MM. Raymond and Arthaud had rendered tuberculisation less easy by previous impregnation of the system with tannic acid.

M. B. ABES then read a long and interesting paper to show that human Tuberculosis was, in the majority of cases, accompanied during its evolution by other micro-organisms besides the bacillus Tuberculosis.

M. DURET (Lille) next detailed his treatment of the different forms of tubercular alteration of the ganglia, which he distinguished clinically under three heads—1st, fibro-caseous; 2nd, simple caseo-tubercular; 3rd, caseo-tubercular, with suppuration fistulæ, etc. In the first, he practised simple excision; in the second, he had good results from pyro-puncturing and emptying the glands; in the last he had also derived benefit from destruction of the vegetations, ulcerations, and fistulæ by the actual cautery. With this treatment he found that the cicatrices observed as the result of abrasion were avoided.

MM. CORNIL and TORPET exposed a case that had come under their observation, in which the introduction under the skin of the most minute fragments of stone had determined a pseudo-Tuberculosis, in which the pathological alterations closely resembled Tuberculosis, and demonstrated that in certain cases a definite opinion could not be given in the absence of the bacillus, or, failing that, it would be necessary to test by experimental inoculation. M. CORNIL also referred to a case of pseudo-Tuberculosis in an antelope, which appeared to depend upon the presence of a bacillus of an ovoid form. The pathological alterations were much the same, and it was hardly possible to differentiate between the diseases in the absence of microscopic investigation.

M. HURCAN strongly condemned the treatment of physicians who recommended phthisical patients to a diet consisting of raw beef and blood.

M. ARLOING said that where doctors considered blood or raw meat should be used they ought to insist on their patients being restricted to the blood and flesh of sheep and goats. As a matter of experiment, he had drunk sheep's blood. If one had his eyes shut, or drank from an opaque glass, he could not tell the difference between it and warm milk, and no disgust was experienced. For the clarification of wine the blood of the sheep or the goat only should be used.

July 28th.—At to-day's meeting, M. ROBINSON, Constantinople, said he was attached to the hospital there, and in a total of 400 patients, from the 1st October, 1885, to the first October, 1887, forty were phthisical patients; consequently, Tuberculosis was not so rare in Asia Minor as had been supposed. In certain parts of Cappadocia, Tuberculosis was pretty common, and in several villages was remarkable for its hereditary transmission in certain families. In the mountainous districts around Sauras, Tuberculosis attacked the population in the proportion of one in fifty, notwithstanding the fact that they were shepherds, living in the open air, and whose nourishment consisted of milk and wheat and rye bread. These conditions might be considered highly unfavourable to the production of the disease. The explanation, he thought, however, was to be found in the fact that they sold

the best of their cattle, and killed and ate the poor and diseased animals themselves. He concluded that the prevalence of Tuberculosis in people so situated must depend on the ingestion of tuberculous milk and meat.

M. SOLLES, of Bordeaux, gave an exhaustive report of a number of experiments he had conducted on guinea pigs, demonstrating the heredity of the disease. These experiments proved that in guinea pigs, as in man, the inherited Tuberculosis did not develop in infantile life, but manifested itself at a somewhat later period; and, further, that experimental Tuberculosis had a very much more rapid evolution than hereditary Tuberculosis.

M. HANOT spoke of tubercular chirrosis, and quoted a number of observations calculated to establish that atrophic chirrosis was frequently the result of the bacillus Tuberculosis in the absence of alcoholism or any other accessory cause.

M. ARLOING exposed the experiments of M. Galtier on the heredity of Tuberculosis, from which it might be concluded that uterine infection was far from being as common as was supposed. He had, however, in the course of his own experiments met with a case in which uterine infection had taken place. Two inoculated female guinea pigs gave birth ten days later to several young, of which one died prematurely. Two others lived three months, and presented some caseous masses under the skin. As no other means of entrance of the bacillus existed, this was necessarily a case of uterine transmission of Scrofula. Other papers were read by M. Ricochon, M. Ferrand, and M. Maluz, on heredity.

M. CAGNEY, of Senlis, made an interesting communication of a recent observation he had made on an outbreak of Tuberculosis in a poultry yard. The lady who owned the poultry died of Phthisis, and her son had just returned, much improved in health, from the South of France. It appeared that this youth had been in the habit of amusing himself by coughing and spitting for the delectation of the fowls, who immediately surrounded him and fought over his expectorations, which they rapidly devoured. M. Cagney had the fowls destroyed and the poultry yard thoroughly cleansed and disinfected, and so far no further case had occurred.

M. JANESCO (of Paris) related a case of rheumatic arthritis, complicated with Tuberculosis, which obtained its interest from the extreme rarity of the complication.

M. VERNEUIL, in a few remarks on M. Janesco's paper, said that, notwithstanding the rarity of these cases, he had some years ago pointed out that this form of morbid *hybridity*, when met with, was found to depend upon the presence of the diseases in the parents—the one being subject to the rheumatic diatheses, and the other to Consumption.

At the afternoon meeting a number of physicians read communications on the treatment pursued by them in cases of Tuberculosis, which consisted principally in surgical interference in glandular affections and the use of local and general antiseptics.

M. ARLOING referred to the experiments already published with regard to inoculation of animals as an element of diagnosis in cases of Tuberculosis in man. He wished, however, to add, as the result of his experiments, that the rabbit, contrary to general opinion, was not a favourable subject for the development of Tuberculosis. If ten rabbits and ten guinea pigs were simultaneously inoculated, some of the rabbits would prove refractory, while all the guinea pigs would become affected.

M. NOCARD confirmed the opinions advanced by M. Arloing. M. SOLLES had also observed the facts presented by M. Arloing.

M. THIERY supported some observations by M. Bang, with regard to the transmission of Tuberculosis to calves in districts where they were reared for veal. In an epizoötic outbreak which he had observed in calves he had

discovered in several instances that one cow in an establishment had been sufficient to cause all the trouble, this cow's milk being mixed in one receptacle with all the rest.

July 29th.—To-day over two hundred members of the Congress visited the Alfort Veterinary School, where they were received by M. Nocard, the affable director of that magnificent institution. After having made a general survey of the institution, the members assembled in one of the amphitheatres, where M. Nocard exhibited a number of specimens and drawings of the lesions of Tuberculosis in various different animals. A number of animals suffering from Tuberculosis were afterwards inspected alive by the members. The animals were then killed, and *post-mortem* examinations made in the presence of the visitors. A number of students rapidly mounted specimens of the bacillus, and submitted them to the microscopic examination of the members. Among the animals thus dealt with were a sheep and a guinea-pig which had been inoculated with a pseudo-Tuberculosis.

July 30th.—M. DE TOMA to-day communicated an interesting paper on the modes of distribution in the system of the bacillus, showing that there was first infiltration of the tissues surrounding the point of inoculation, from which the bacillus was carried by the lymphatics to distant organs. MM. STRAUSS and WURTZ made a communication on the influence of the gastric juice on the bacillus Tuberculosis. From a number of carefully-performed experiments which they had made it appeared that the gastric juice is capable of killing the bacillus Tuberculosis in six hours, but that the bacillus still conserves its virulence for over five hours. M. PETRESCO said that, as contagion was spread principally by expectorations, it was not sufficient to disinfect them after emission. It was preferable to deprive them of their infectious properties beforehand, and consequently he had devised a very easily carried inhalator, from which the patient could inhale all day without any inconvenience, the apparatus being carried in the breast pocket. M. Leloir, M. Jeauselnic, and M. Jacobi (of New York) continued the discussion. At the evening meeting M. BUTEL supported the opinion that the infection of Tuberculosis was much more frequently the result of ingestion than of respiration. Several other members spoke in support of M. Butel's contention. The remaining time of the meeting was principally occupied by a communication on the surgical treatment of tubercular complications.

July 31st.—After the reading of a great number of papers, dealing principally with the treatment of Tuberculosis, some discussion took place on the prophylactic measures which should be recommended to the State. The PRESIDENT, however, pointed out to the members that our recommendations in the meantime could only take the form of an expression on the general basis of desirable legislation, and intimated that the committee had classed the propositions emitted by certain members as follows:—

I.—"There ought to be placed in the attributions of the hygienic councils all the questions relating to the contagious diseases of the domesticated animals, comprising all such diseases which do not at present seem transmissible to man. To Vaccinia, Glanders, Rabies, Anthrax, Tuberculosis there might indeed be added later other common infectious diseases requiring equally a common protection." Unanimously adopted.

II.—Every possible means should be adopted, comprising compensation to parties interested, for the general application of the principle of seizure and general destruction in totality of all flesh belonging to tuberculous animals, no matter how slight the specific lesions found in such animals.

III.—Printed simple instructions should be distributed in the towns and throughout the country indicating the means necessary for the protection of the people from the dangers of tubercular infection from food, particularly from milk, and how to destroy the germs contained in the expectorations of

the phthisical. M. GUINARD proposed to extend these instructions to linen, clothes, and objects used by the tubercular subjects. The proposition, thus amended, was unanimously adopted.

IV.—It is necessary to submit dairies to a special surveillance, so that it may be ascertained that the cows are not affected with contagious disease capable of communication to man. (Unanimously adopted.) Mr. Robinson, of Greenock, communicated to the members the recommendation of the Commission in England on the subject of Tuberculosis. Dr. Petit announced that a charitable work had been founded, entitled "Œuvres des Candidats à la Tuberculose," for the purpose of gathering children of poor phthisical parents, so as to rear them under the best hygienic conditions until they arrived at adult age. Two hospitals had been founded, one at Ormesson, near Paris, and the other at Valescene, on the borders of the Mediterranean.

The next Congress was fixed to meet two years hence. M. Villemin was voted President for the next Congress amidst deafening applause. After the usual votes of thanks the session closed.

CONTAGIOUS PLEURO-PNEUMONIA AND TUBERCULOSIS.

THE report of the Departmental Committee appointed by the Privy Council to inquire into Bovine Contagious Pleuro-pneumonia and Tuberculosis in the United Kingdom, was recently presented to both Houses of Parliament, and was circulated amongst the members. The committee consisted of the following:—Mr. Jacob Wilson (chairman), Sir G. Macpherson Grant, Bart., Mr. J. Bowen-Jones, Mr. P. Stirling, Professor Horsley, Professor Brown, C.B., Lord Cloncurry, with Mr. R. Dawson, secretary.

It embodies a very exhaustive inquiry, a great number of witnesses—veterinary and others—having been examined, and their evidence has enabled the committee to draw up the following summary of recommendations addressed to the Lords of the Privy Council.

With regard to the first-mentioned disease, they state:

It now remains for us to lay before your lordships a summary of the recommendations on the subject of Pleuro-pneumonia which we have to offer, and which are based upon the considerations above detailed.

That the system of compulsory slaughter be applied not only to all diseased cattle, but also to all cattle which have been in association with them, or otherwise in any manner exposed to the infection of disease.

Compulsory slaughter should be accompanied by supplementary measures, such as restrictions on the movement and sale of cattle within, or coming from, infected districts.

Any exception to, or modification of, the system of compulsory slaughter, as provided in the Slaughter Order, 1888, should only be applicable to cattle in the dairy yards, byres, and cowsheds of large towns, the owners or occupiers of which may claim in writing the privilege of exemption for their cattle from immediate slaughter on the following conditions:—

(1) No head of cattle that has been brought into such dairy premises shall be removed therefrom, except for the purpose of immediate slaughter.

(2) In the event of an outbreak of Pleuro-pneumonia, all the diseased cattle shall be slaughtered.

(3) All the remaining cattle on such premises where an outbreak has occurred shall be branded, and regularly subjected to the thermometer test; and whenever a continuous increase of temperature, rising above 104 degrees, is shown, they shall be slaughtered.

(4) No fresh cattle shall be admitted into such premises while any of the cattle thus branded remain alive.

Inoculation, for the reasons already detailed, cannot be recommended as a

means of eradicating Pleuro-pneumonia, nor as practicable under existing conditions. Although it is open to owners to inoculate their cattle, it should be distinctly understood that that operation shall not give them any immunity from the regulations above suggested.

The scale of compensation for animals slaughtered compulsorily should remain as at present. In the case of dairy cows, however, compensation should be awarded upon the basis of their value for dairy purposes, and not of their value to the butcher.

We recommend that, in order to put a stop to the frequent concealment of disease, a more stringent scale of penalties be put in force.

(1) That, for the first offence, the penalty should not be less than one-quarter of the present maximum penalty.

(2) For the second offence not less than one-half.

(3) For the third offence not less than three-quarters.

(4) The full penalty for any further offence.

The above to be irrespective of anything contained in the Summary Jurisdiction (Scotland) Act, 1881.

The administration of the Contagious Diseases (Animals) Acts throughout the United Kingdom, so far as they refer to compulsory slaughter and to the treatment and control of animals in herds or on premises where an outbreak of Pleuro-pneumonia has occurred, or in the surrounding area, shall be subject to, and under the direction of a central authority.

Local authorities shall continue to exercise all the powers that they at present possess, subject to the foregoing transfer of control to the central authority in the case of an outbreak of disease.

In all cases of compulsory slaughter, compensation should be provided from a national fund, whether drawn from the Consolidated Fund, or from a national rate specially levied for this purpose. All other charges—such as for inspection, disinfection, etc.—should be defrayed from a local rate, as at present.

It is highly desirable that the system of appointing veterinary inspectors by local authorities should be amended. Under each local authority there should be one responsible inspector, and care should be taken to secure the services of duly qualified and experienced veterinary surgeons.

Throughout the United Kingdom district inspectors should be appointed by the central authority, under whose direction they shall be, and to whom only they shall be responsible. Whether this system be adopted for the whole of the country or not it is, in our opinion, highly desirable that it should be at once put into operation in those districts which we have already indicated as specially infected with disease.

A more rigorous and careful inspection of town dairies and cowsheds is most urgently needed. We consider that every encouragement should be given to the removal of such establishments from crowded centres of population, and we would suggest the advisability, where possible, of suitable buildings being erected by corporations or other authorities, and let out to dairymen and cow-keepers.

A special system of inspection, and further restrictions upon the movement of dairy cows, should be immediately established in the Dublin districts.

Wherever practicable, local authorities should be called upon to erect public abattoirs as a substitute for private slaughter-houses.

Believing, as we do, that it is only by uniformity of action that we can hope to contend successfully with Pleuro-pneumonia, we desire to express our firm conviction of the desirability of vesting the administration of the Contagious Diseases (Animals) Acts in a single Governmental department, which should be sufficiently representative of the United Kingdom of Great Britain and Ireland.

In the event of its being deemed advisable to conduct an experimental inquiry into the nature of Pleuro-pneumonia and its preventive treatment by inoculation, we recommend that such inquiry should only be carried out under the following stringent regulations:—

(1) By a board of experts duly appointed by the Government, and on premises specially set apart and licensed for that purpose.

(2) No cattle entering such premises should ever be permitted to leave them except for the purpose of immediate slaughter, and under charge of an officer, who shall see that the slaughter is duly carried out.

With regard to Tuberculosis, the Committee remark: The great discovery that the tubercles or foci of the disease contained a virus or poison capable of inducing the disease when inoculated into the lower animals was first made by Klencke in 1843, but first described at length and placed on an undeniably firm basis by Villemin in 1865. The nature of the poison itself remained unknown, until it was discovered by Koch, in 1881, to be a rod-shaped microbe. The spores or seeds of the microbe have greater vitality than the adult rod. The temperature most favourable to the growth of the microbe is that of the ordinary heat of the animal body—from about 98·5° to 100·5° Fahrenheit. Growth ceases at 82° F., but the bacillus is not killed by cold. Kept at a temperature of about 107·5° F. for several weeks the organism becomes exhausted and dies.

It is abundantly evident that the infectious discharges of a tubercular subject remain actively virulent in this climate for a long time after they have been cast from the body, and that stalls and sheds may thus become a source of danger unless thoroughly cleansed. It appears that the organism grows most readily in omnivorous and herbivorous animals—carnivora being very rarely affected.

Certain unhealthy conditions cause a predisposition to contract the disease. Such are—starvation, bad ventilation, exhausting secretions, *e.g.*, prolonged lactation, heredity.

Modes in which the Virus or Microbe enters the Body.

The bacillus has been proved to enter the body and cause disease by inhalation, swallowing, direct introduction through a cut or sore in the skin or mucous membrane, and possibly intra-uterine.

Mode of Attack.

The disease may attack the body of an animal in two different ways. It may be introduced into the blood and distributed generally, so setting up the condition known as *acute* or *general* or *miliary Tuberculosis*. It may affect for a considerable time only the point of entry and the neighbouring lymphatic glands—*local Tuberculosis*.

Distribution of the Disease within the Body.

This is difficult to connect with any special mode of introduction of the virus, save perhaps inhalation. In cattle the lungs and pleura, and the serous membranes generally, are the favourite seats of the disease. In pigs it commonly attacks the glands in the neck. In rodents the spleen, the liver, the lungs, and the bones. In fowls the nose, mouth, and the spleen. In horses the glands, and in man the glands, lungs, joints, and the nervous system.

The distribution of the disease and the bacilli in the body closely affects the question of the use of tubercular meat as food. The marrow of the bones is affected at an early period, and, although rarely, the flesh may be.

The secretions from diseased organs contain the bacilli, and are consequently infective in proportion to the activity of the malady. It is obvious that the fact of milk being infected is of primary importance to the health of both animals and men.

Frequency of Occurrence among Animals and Men.

It has been calculated that to this poison alone are due from ten to fourteen per cent. of all deaths among human beings.

The proportion among animals has not been so clearly made out. It is much more common among milking cows than other kinds of stock, and it is found that the lowest percentages occur in herds fed in the open air most of the year, the higher death-rates being among dairy cattle inhabiting sheds.

The relative frequency with which the disease appears among fowls seems to be not generally known, except to veterinary surgeons of large cities. Both from direct experiment and from clinical observation, it is now proved not only that the fowl may contract the disease from man by reason of its swallowing the expectorated bacilli, but that it thereby forms a vehicle for the further transmission of the disease to man and the lower animals.

Remedial Measures.

Legislation directed to the protection of cattle from Tuberculosis should at the same time include such measures as will also prevent its communication to man, and must follow the two lines of prevention and extirpation.

Preventive Measures

should include—Improved hygiene of cattle sheds, isolation of suspected animals, precautions against the flesh or milk of diseased animals being given to others as food—*e.g.*, to pigs, fowls, etc. Care that fodder, litter, and water should not be taken from diseased to healthy animals.

Obviously, diseased animals, sometimes even in the last stage of the malady, are sold in open market; we are therefore very strongly of opinion that power should be given to the veterinary inspector to seize all such animals in fairs, markets, or in transit.

Since all authorities are agreed that the disease is very marked by heredity, we think it highly desirable that breeders should, in their own as well as in the public interest, discontinue breeding from tuberculous stock.

Extirpation.

In order to ensure the general extirpation of Tuberculosis, we are of opinion that it should be included in the Contagious Diseases (Animals Acts, so as to provide

(1) For the slaughter of diseased animals when found on the owner's premises.

(2) For the payment of compensation for the slaughter of such animals.

(3) For the seizure and slaughter of diseased animals exposed in fairs, markets, etc., and during transit.

(4) For the seizure and slaughter of diseased foreign animals at the place of landing in this country.

Notification of this disease should not be compulsory, because it may exist without developing any sufficient outward evidence to enable the owner to detect it, and its growth is so slow that non-notification of its existence, even in a large number of cases, would do little to nullify the stamping-out effect of the Act of 1878.

The owner should be compensated for the slaughter of a tuberculous animal at the rate of three-fourths of its value before it was slaughtered, and the valuer should shape his estimate according to its worth to the owner—*i.e.*, as a milk-producer, or for any other special purpose.

If the animal should be one of great value, as in the case of pedigree stock, its worth might be determined by arbitration.

Professor Horsley adds a Supplementary Report, in which he suggests "that wittingly breeding from tuberculous animals should be made an indictable offence," and that "the compulsory notification of the disease should be included in any legislation for Tuberculosis."

Reviews.

THE MANAGEMENT AND DISEASES OF THE DOG. By J. WOODROFFE HILL, F.R.C.V.S. Third Edition. (London: Swan Sonnenschein and Co. 1888.)

The third edition of Mr. Hill's excellent work on the management and diseases of the dog marks an improvement on the second edition in some particulars, and renders it still more useful to those for whom it was written. Its success is the best criterion of its value, and dispenses with further eulogium from us.

A TREATISE ON THE DISEASES OF THE OX. Second Edition. By J. H. STEEL, M.R.C.V.S. (London: Longmans, Green and Co. 1887.)

We can only repeat what we have said above, with regard to the second edition of Mr. Steel's treatise on the ox. The work has received careful overhauling, and is fully brought up to the present time in its pathology.

We may assuredly repeat what we stated with regard to the first edition, and recommend the present one as heartily as we did it.

Army Veterinary Department.

We are very gratified in publishing the following announcement which appeared in the *London Gazette* of August 21st:—

Whitehall, Aug. 20th.

The Queen has been pleased to give and grant unto John Robert Beech, Esq., C.M.G., Veterinary Surgeon attached to the Egyptian Army, Her Majesty's Royal licence and authority that he may accept and wear the Insignia of the Order of the Medjidieh of the Fourth Class, which His Highness the Khedive of Egypt, authorised by His Imperial Majesty the Sultan, has been pleased to confer upon him in recognition of his services while actually and entirely employed beyond Her Majesty's Dominions with the Egyptian Army.

Obituary.

IT is with much regret that we have to announce the death of one of the most respected of our Colonial colleagues, Mr. Graham Mitchell, F.R.C.V.S., of Melbourne, Australia, well-known and greatly appreciated in the Colony, and in fact, throughout Australasia. It appears that his death was, like several of those we have had to record lately, quite sudden and unexpected, and the sad event was rendered all the more painful from the fact that he died when quite alone, and no one knew of the occurrence until some days (it is supposed ten) elapsed. He had attended the first meeting of the Veterinary Board appointed under the Colonial Veterinary Surgeons Act, on June 4th, leaving in the evening in his usual health and spirits, and his body was only discovered on the 14th of that month. Mr. Mitchell will be greatly missed by the profession generally in Australia; and his presence and advice will be still more missed at the Board meeting above referred to, as he was an authority on all veterinary matters in his part of the world, having gone to Australia in 1854, and assumed a very prominent part in Melbourne, which he maintained throughout his career. He introduced the measure of protective inoculation for contagious Pleuro-Pneumonia, and perfected the opera-

tion to such an extent as to make it very successful and popular. In many other ways he rendered such valuable service to the colony, that his loss is considered a public one. Mr. Mitchell was a graduate of the Dick College, having obtained the diploma of the Highland and Agricultural Society in 1854. He became a member of the Royal College of Veterinary Surgeons in 1871, and a foundation Fellow in 1877. Many of those who were his fellow-students will receive the news of his death with sorrow, as they have remembered him through the long course of years as a genial and sincere friend. The *Melbourne Argus* of June 15th notices his demise as follows:—"It will be learned with regret that yesterday morning Mr. Graham Mitchell, the well-known veterinary surgeon, was found dead in bed at his rooms, Kirk's Bazaar. Mr. Mitchell had not been seen since the 4th inst., and his office remained closed, but no apprehension was at first awakened by the fact, as it was concluded he was out of town. When, however, his absence became prolonged, some anxiety was felt. On Wednesday evening, one of his friends climbed up to the office window, and saw some portions of his clothing lying on a chair. This aroused some anxiety, but still there was a reluctance to break into the place. Yesterday morning the facts were communicated to the police, and the door was broken open. Mr. Mitchell was then found lying dead in bed, in a very peaceful attitude, indicating that he had expired in his sleep. The body was in an advanced state of decomposition. Some letters were found unopened on the floor which had been pushed under the door. Some of them bore the postmark of the 4th inst., and had probably been delivered on the morning of the 5th. It is therefore concluded that he died on the night of the 4th inst. The body was removed to the morgue, where Dr. Moore made a *post-mortem* examination. He found, as had been anticipated, that death resulted from natural causes. An inquest will be held at 11 o'clock this morning. The deceased, who was unmarried, was fifty-four years of age. He was a Fellow of the Royal College of Veterinary Surgeons, and was honorary veterinary surgeon to the National Agricultural Association of Victoria. He was, however, more widely known in connection with the vaccination of children with lymph obtained direct from the calf, in which he took a great interest."

Death has also removed from our ranks one of the senior members of the profession, George Baker, M.R.C.S., M.R.C.V.S., of Reigate, Surrey, who graduated in 1832, but had retired from practice for some years. He had held the office of Member of Council from 1844 to 1849, and acted as an Examiner from 1844 to 1846—the first years of the Royal College.

Mr. Helmore, M.R.C.V.S., who graduated in 1845, died recently at Forestgate. He was a Vice-President of the Royal College from 1859 to 1864, and took a warm interest in the profession up to recent years.

The demise is also reported of W. H. Holmes, M.R.C.V.S., Scarborough, who graduated in 1861; and H. Jennings, M.R.C.V.S., Chelmsford, a graduate of 1876.

The Veterinary Profession in Belgium has recently lost one of its most distinguished members. M. Hugues, Military Veterinary Surgeon (First Class) and Professor of Hippology at the School of War, Brussels, has died after a long and painful illness, at the early age of forty-seven years. Endowed with great ability, and zealous in promoting veterinary medicine, Hugues' reputation extended far beyond his own country, and those who attended the International Congress at Brussels in 1883 will remember the estimation with which his report on Veterinary Teaching was received. He was a member of the Royal Academy of Medicine of Belgium, and of several veterinary societies on the Continent, and was elected a Foreign Associate of the Royal College of Veterinary Surgeons in 1885.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JULY 26TH, 1888,

Professor PRITCHARD, President, in the chair.

Present—Messrs. Barford and Briggs; Professor Brown, C.B.; Messrs. Carter, Cartledge, J. Roalfe Cox, and Dray; Professor Duguid; General Sir F. Fitzwygram; Dr. Fleming, C.B.; Messrs. Greaves and Mulvey; Sir Henry Simpson; Messrs. Jas. Simpson, Stephenson, and P. Taylor; Professor Walley; Messrs. Whittle, Wilson, Woods, Wragg, Thatcher (Solicitor), and the Secretary.

The SECRETARY read the notice convening the meeting.

The minutes of the last meeting were taken as read.

Sir HENRY SIMPSON said he had given notices of motion to the Secretary for them to be entered on the agenda, and received an acknowledgment stating that they would be duly recorded. He wished to say that a special meeting was not required. Some time ago the Solicitor stated that all Council meetings were general ones, except for the alteration of bye-laws. With regard to the proposed addition to Bye-law No. 4, the Charter laid it down that no alteration in the bye-laws could be discussed until it had been suspended for three months after notice given at a Council meeting. Notice of the proposed addition was only given in May, so that the three months had not yet expired.

The SECRETARY announced the receipt of the Annual Report of the Agricultural Department (presented by Professor Brown) and the Annual Report of the Veterinary Department of the Army (presented by Dr. Fleming).

On the motion of Mr. DRAY, seconded by Mr. PETER TAYLOR, a vote of thanks was passed to the two donors.

CORRESPONDENCE.

Letters were announced—

From Mr. Wilson and Mr. Stephenson, thanking the Council for the honour of their election.

From Mr. J. Caldecott, a student, asking to be allowed to join Professor Williams's College next April, and go in for examination in May.

It was decided that this was simply a question for the School to consider.

From Mr. Gibson, asking that a student who would attain the age of twenty-one in June might be allowed to go in for his examinations in May. The Secretary was instructed to refer him to the bye-law.

From the Royal Commission on Horse-breeding, and from the Royal Agricultural Society, suggesting a conference of members of the profession on the question of "soundness."

Dr. FLEMING said this was a very important matter. Hitherto the veterinary profession had been entrusted with the duty of examining horses and reporting whether they were sound or not, especially for stud purposes. He thought the Royal College of Veterinary Surgeons should accept the offer which had been made, and undertake the duty of reporting to the Commission as to the defects which should disqualify a horse for breeding purposes. The question of soundness and unsoundness was of the highest importance to the country. Upon the opinion at which the members of the College arrived would depend the passing or the rejection of highly valuable horses. He therefore thought that a committee should be appointed to draw up a report which should be worthy of the College.

Professor WALLEY agreed with Dr. Fleming as to the importance of this subject. It affected England more than Scotland, because in the Agricultural Society of Scotland the question of "soundness" seldom or never arose, or in other words, there was no examination for "soundness."

Mr. STEPHENSON considered that no investigation and no committee would

settle this question. They might all agree that spavins, ringbone, etc., constituted "unsoundness," but the difficulty arose when one professional man said a horse had a spavin and another said it had not.

Mr. WILSON said the point was what were the diseases which rendered a horse unsound for breeding purposes. He suggested that the matter should be referred to a committee of the whole Council. A sub-committee might be appointed to draw up a list of subjects for consideration.

The PRESIDENT said he quite concurred in the general remarks made by Dr. Fleming and Professor Walley. He thought the work should be undertaken, and that whatever difficulties arose should be dealt with to the best of their ability. He had not the slightest doubt that almost insurmountable difficulties would be met with. Would any veterinary surgeon holding the diploma of the College like to take the responsibility of going into a show-ring and saying that a horse with a spavin was "sound" or "unsound"? At the same time, the Royal College of Veterinary Surgeons ought to feel itself honoured by being asked by the Royal Commission on Horse-breeding and the Royal Agricultural Society to take upon itself the responsibility of laying down certain rules for the guidance of breeders in such cases.

Mr. P. TAYLOR also agreed that the question was a most important one.

Dr. FLEMING moved, "That the Royal College of Veterinary Surgeons undertake the duty which it has been asked to undertake."

Mr. CARTLEDGE seconded the motion.

Mr. JAMES SIMPSON thought that the Royal College of Veterinary Surgeons was the right body to deal with the subject. If they shirked the task veterinary surgeons would in future be dispensed with.

Professor BROWN said he knew privately that what was thought to be expedient was that the Council should summon a conference of a number of veterinary surgeons to discuss the matter, and decide what was hereditary "unsoundness."

Mr. JAMES SIMPSON considered that the letters called upon the Council as a representative body to state what were the "unsoundnesses" that should be considered hereditary.

Professor BROWN said that what the Royal Commission wanted was that the Council should convene a conference of members of the veterinary profession.

Sir HENRY SIMPSON said that last year, having had the subject brought before him, he ventured, as President of the Royal College of Veterinary Surgeons, to suggest that a conference of veterinary surgeons and stewards of horse-shows and exhibitions should be held. People were getting weary of the diversity of opinions that had been expressed. The differences were not on matters of fact, but as to the value which should be attached to certain defects. He quite agreed with Dr. Fleming's suggestion, which affirmed the principle that the College should undertake the duty.

The motion, "That the College undertakes the duties as requested by the two societies," was carried unanimously.

The next letter was from Professor McQueen, tendering his resignation as Examiner in Botany.

On the motion of Mr. WOODS, seconded by Mr. DRAY, the resignation was accepted.

On the motion of Dr. FLEMING, a vote of thanks was passed to Professor McQueen for the services he had rendered to the Royal College of Veterinary Surgeons.

A letter was announced from Mr. W. Hunting, enclosing copy of a new weekly journal for the profession, asking that copies of the report of the meetings of the Council might be supplied to him.

On the motion of Mr. WRAGG, the application was agreed to.

A letter was announced from Mr. Gadsden, enclosing copies of testimonials in favour of Mr. Wheat, veterinary surgeon, Philadelphia, and asking that he might be granted a degree.

On the motion of Dr. FLEMING, seconded by Professor WALLEY, it was agreed "That an answer be sent stating that the Council regret extremely that the request cannot be complied with."

The SECRETARY announced that the Privy Council had confirmed the decision of the Council of the College, that Mr. Fox, a farrier practising in India, was not entitled to registration, which he had applied for.

A letter was read from Mr. Dale, dated June 15th, 1888, stating that he had ceased to use the term "Veterinary" in connection with his name.

A MEMBER said that Mr. Dale's name still appeared in Directories with the letters "M.R.C.V.S." following.

A MEMBER said that for three or four years Dale had been engaged as an office-boy. After a time he was entrusted to mix medicines, give balls, and assist in operations. Dale gave out that he was "Mr. F. H. Dale, late assistant to Professor Pritchard, M.R.C.V.S."

A MEMBER said that on a card issued by a farrier it was stated that the veterinary in attendance was Mr. F. H. Dale. In his opinion it was one of those cases that ought to be made an example of, and he was quite prepared to move that the Solicitor be instructed to prosecute.

After some further discussion, it was agreed "That the Solicitor be instructed to inquire into the case, and if he sees good grounds for prosecuting, to do so."

A letter was announced from the Solicitor referring to certain cases that he had been asked to consider, and on the motion of Mr. BARFORD, seconded by Mr. CARTLEDGE, it was agreed "That in the cases of those gentlemen who are to be prosecuted at long distances from London, the Solicitor be empowered to employ local solicitors."

Dr. FLEMING said it was evident that, as time went on, the expenses to which the College would be put in such matters would be very serious. He thought the time had arrived when the Lords of the Privy Council should be asked to allow the fines to go to the College, for by such prosecutions they were protecting not only the profession, but the public. In almost every other instance the penalties inflicted on impostors went to the public body which by charter or Act of Parliament was empowered to prosecute. He would therefore move "That steps be taken to represent to the Lords of the Privy Council the position of the College with regard to these prosecutions."

Professor WALLEY seconded the motion, which was agreed to.

Sir FREDERICK FITZWYGRAM, referring to the horse-tax, said that when the Bill was first introduced he asked the Chancellor of the Exchequer whether he would give to veterinary surgeons the same privileges as those given to medical men, and the answer was in the affirmative. When the Bill was printed, however, veterinary surgeons were omitted; and on being reminded of his promise, Mr. Goschen said, "I find that whatever exemptions I make cause application for a dozen more exemptions on somewhat similar grounds; but if you will put down a motion in the House to exempt veterinary surgeons I have no objection to it. But let it be your act and the act of the House, not mine. Whether I can grant it or not will depend upon the temper and tone of the House, but if there is an expression in favour of the exemption of veterinary surgeons I shall be very pleased to grant it." It appeared to him that the question of success mainly rested on the members of the College using their influence with Members of Parliament, in order to get them to support the motion to exempt veterinary surgeons. If Members who were interested in the profession were asked to give their assistance, and to be in the House when the motion came forward, he did not think there would be much difficulty about it.

Dr. FLEMING considered that such exemption would pave the way to the removal of the hardship of being liable to be summoned as jurymen.

The PRESIDENT said he was personally very much obliged to Sir Frederick Fitzwygram for bringing the matter before the Council. He should do everything in his power to get his friends in the House of Commons to support Sir Frederick's motion.

The SECRETARY read notices of motion from Sir Henry Simpson and Mr. Cox, relating to the appointment of committees and additions to bye-laws.

A letter from Professor Walley was read, proposing that the power given to the Chairman of the Board of Examiners to exclude obnoxious persons from the examination-room should be withdrawn.

Professor WALLEY said that if a teacher were excluded from the examination-room he had not an opportunity of knowing on what lines the examinations were conducted. Such exclusion should not be for all time.

Dr. FLEMING said that he was perfectly sure that no Chairman of the Examining Board would exclude any person without consulting his colleagues, and therefore it should be left to the Chairman to decide how long the exclusion should last.

Professor WALLEY: Was this matter considered by the Examining Board?

The PRESIDENT: Unquestionably, and agreed to by the whole Board.

Mr. J. SIMPSON stated that he had been informed by the Secretary that since the last meeting of Council the right of entrance from the College back yard to the street had been exercised, and workmen had made use of it from June 30th to July 5th.

A MEMBER proposed that the name of Mr. Harland be struck off the Register, he having been convicted at Sunderland and sentenced to six months' hard labour for horse-stealing.

The motion was agreed to, twenty-one members of Council being present.

The SECRETARY read the report of the Finance Committee, which recommended that any Examiner living outside a radius of 100 miles from the place of examination be allowed his first-class travelling expenses.

On the motion of Mr. DRAY, seconded by Mr. WRAGG, the report was adopted.

On the motion of Professor WALLEY, seconded by Mr. CARTER, the report from the Court of Examiners was taken as read, received, and adopted.

On the motion of Professor WALLEY, seconded by Mr. WRAGG, the report on the Examination for Fellowships was taken as read, received, and adopted.

Professor Brown, Professor Pritchard, Professor Duguid, Dr. Fleming, and Mr. Cox were nominated as Examiners for the Fellowship degree.

A ballot was taken, with the result that the following were elected: Professor Brown, Professor Duguid, and Dr. Fleming.

On the motion of Mr. CARTLEDGE, seconded by Mr. CARTER, the Parliamentary Committee were re-elected, with the addition of Sir Henry Simpson.

On the motion of Sir HENRY SIMPSON, seconded by Professor WALLEY, the Museum Committee, the House and Building Committee, and the Library Committee were amalgamated into one General Purposes Committee.

The former members of those Committees (with the exception of Mr. Harpley) were re-elected, with the addition of Sir Henry Simpson and Mr. Wilson, on the motion of Professor WALLEY, seconded by Mr. BARFORD.

On the motion of Mr. BARFORD, seconded by Mr. WHITTLE, the Registration Committee were re-elected, with the addition of Sir Henry Simpson and Mr. Wilson.

The Examination Committee (consisting of the whole of Council) and the Bye-laws Committee (with the addition of Mr. Mulvey), were reappointed.

The Finance Committee were reappointed, with the addition of Sir Henry Simpson and Mr. Wilson.

The Dinner Committee were reappointed, with the addition of Mr. Wilson.

It was agreed that a list of committees be printed and circulated.

The obituary notice was read.

Mr. WRAGG gave notice that at the next meeting of Council he would move that a committee be formed to report on the best means of carrying out the suggestion of the Royal Agricultural Society and the Royal Commission as to a conference on "Soundness."

Mr. J. SIMPSON moved, "That to enable the Registrar to issue a corrected list of existing practitioners who are entitled to have their names entered in Register No. 3 under the Veterinary Surgeons Act of 1881, he be instructed to obtain the required information under the power given to him by Section 5 of the Veterinary Surgeons Act of 1881; that the necessary inquiries commence forthwith, and that the Registrar be allowed such additional clerical help to enable him to make the necessary investigation as may appear reasonable to this Council."

Dr. FLEMING seconded the motion, which was agreed to.

A vote of thanks to the President concluded the proceedings.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of this Association was held at Henley-on-Thames on 27th July. The attendance included Mr. F. W. Wragg (President), who occupied the chair; Professor Pritchard, Professor Walley, Sir Henry Simpson, and Messrs. H. Kidd (Hon. Sec.), J. P. S. Walker (Hon. Treasurer), J. F. Simpson, E. J. Mellett, J. D. Barford, W. J. Mulvey (London), A. C. Barlow, W. Hunting, E. C. Howard, R. Page Bull, W. Woods, H. G. Rogers, and W. A. Hunting.

The Hon. SECRETARY announced the receipt of letters of apology from several members, and said he was sorry to have to report the loss by death, since the last meeting, of three members of the society—viz., Mr. Rostron, of the 2nd Life Guards; Mr. Harpley, of London; and Mr. Hunt.

The PRESIDENT was sure every member deplored the death of these three gentlemen. (Hear, hear.)

Mr. BARFORD proposed that letters of condolence with the families of the gentlemen named be sent, expressing the sympathy of the society with them in their bereavement.

Mr. MULVEY seconded the resolution, which was carried unanimously.

Mr. Hatton, of Richmond, Surrey, was unanimously elected a member.

PURCHASE OF INSTRUMENTS.

The PRESIDENT said that the Committee appointed to draft a scheme for the purchase of instruments for the use of the members of the Association had been called to meet before the annual general meeting of the society; but as only four members attended, they arranged for a further meeting that day. The train service, however, prevented them from meeting in time, so that he thought the business had better be deferred to the next meeting, when no doubt a scheme would be ready.

After some discussion, it was agreed, on the proposition of Mr. SIMPSON, seconded by Mr. MULVEY, to discuss the matter at the present meeting.

Sir HENRY SIMPSON then moved "That the committee be requested to undertake the purchase of a complete set of dental instruments, if in their opinion such a course was desirable." Those instruments would, he had no doubt, be purchased before another month was over, and they could be added to as funds allowed.

Mr. MELLETT seconded the resolution, and it was carried, as was a subsequent motion "That the President for the time being have the care of such instruments as may be purchased," and it was left to the committee to draft

a code of rules, to be submitted to the next meeting, to regulate the lending of these instruments.

PLACE OF NEXT MEETING.

On the proposition of the PRESIDENT, seconded by Sir HENRY SIMPSON, London was unanimously selected.

A most interesting and exhaustive paper was then read on

OPHTHALMIA,

by Professor WALLEY.

Mr. SIMPSON said the subject was one of such importance that it could hardly be fully dealt with that day. He begged therefore to propose that the discussion be postponed until their next meeting, and that Professor Walley would kindly allow his valuable paper to be printed and circulated among the members of the Association, in order that they might fully acquaint themselves with its contents in the meantime.

Professor PRITCHARD seconded the motion.

Professor WALLEY expressed his readiness to allow the paper to be printed. The only objection to the course proposed was that the essayist got little chance of hearing the discussion and replying to it; and he would ask them to have notes of the discussion taken, so that if he could not attend he might send a written reply, to be read at the following meeting.

Mr. WOODS tendered to Professor Walley his hearty thanks for his valuable paper. He did not agree with the Professor, however, that colliery horses were more liable to go blind than others. In his younger days he had a good deal to do with inflammation of the eyes, Ophthalmia, in pit horses, but now he rarely saw a case. He attributed the improvement to better hygienic treatment of the ponies. In most stables where there were twenty or thirty ponies the return air that had gone all round the colliery ultimately passed through the stables. They were very ill-ventilated. Some time ago he particularly noticed over 200 ponies that had been turned out of the pits owing to a strike, and although some of them had been underground eleven or twelve years, he did not find one afflicted with Ophthalmia. If they were brought up at night, which he always insisted upon, they were not affected at all.

Professor WALLEY replied that in making the statement he said that "in his experience" it had been the case that pit ponies were more likely to become blind than other horses. He had had some experience of Ophthalmia in pit ponies. Some years ago Mr. Mulvey was kind enough to procure for him a truck-load of pit ponies for dissection, and out of the six or eight there was scarcely one without Ophthalmia.

The resolution was carried unanimously.

THE HORSE-TAX.

Sir HENRY SIMPSON brought this subject before the meeting. As they were aware, there was a proposal to tax all horses used by professional men, as under the old Act; but there was under the latter exemption in certain cases. Veterinary surgeons, however, were not exempt. Some time ago, when the Budget Bill was contemplated, the Chancellor of the Exchequer said "medical men" would be exempt; and he (Sir Henry) being then President of the Royal College, ventured to emphasise the fact that veterinary surgeons were medical men, and ought to be entitled to exemption. (Hear, hear.) Mr. Goschen's secretary wrote to him that the matter should have the best consideration of the Chancellor of the Exchequer. Sir Frederick FitzWygram saw the Chancellor, and he promised him that veterinary surgeons should be exempt. The Bill came out the other day, and veterinary surgeons were not included in the exemption, the definition of persons entitled to exemption in respect of one horse being "physician, surgeon, or apothecary." Sir F. Fitzwygram saw the Chancellor of the Exchequer, who admitted it was true that

he had said so, but stated that claims for exemption were coming in from all quarters, and that he had therefore determined to adhere to the lines of the old Act; but he added that he should not oppose a motion in the House to exempt members of the Royal College of Veterinary Surgeons in practice. The matter was not one of £1 a year, but the great thing was for them to try to get exempt, because that would ally them in status with the physician and surgeon. Sir F. FitzWygram was anxious that Members of Parliament should be approached, in order that when he moved the amendment, as he was prepared to do, they would support him. Sir Frederick brought the matter before the Council of the Royal College yesterday, and he (Sir Henry Simpson) hoped those present would act on the hint.

On the proposition of the PRESIDENT, a hearty vote of thanks was given to Professor Walley for so kindly reading a paper at this Association.

On the motion of Mr. BARFORD, a cordial vote of thanks was given to the President for presiding. H. KIDD, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held in the Medical Institute, Hope-street, Liverpool, on June 13th, at 6.30 p.m., tea having previously been partaken of at the Adelphi Hotel.

Present: Mr. J. B. Wolstenholme (President), Prof. Williams, Messrs. Thos. Greaves, W. A. Taylor, T. Hopkin, W. Dacre, J. W. Ingram, and S. Locke, Manchester; R. C. Edwards, Chester; Jas. Eltaft, Lancaster; Thos. Briggs, Bury; R. C. Trigger, Newcastle-under-Lyne; A. M. Michaelis, Stockport; W. Woods, jun., Wigan; W. Whittle and Arthur New, Worsley; Thomas Dobie, Birkenhead; R. S. Mitchell, Geo. Morgan, and the Secretary, Liverpool.

Apologies, regretting their inability to attend, were received from the following gentlemen:—Profs. McCall, Walley, and Axe; Messrs. J. Malcolm, J. B. Taylor, W. H. Bridge, E. Faulkner, E. Day, H. Kidd, Jas. Storrar, J. S. Hurndall, Jas. Marshall, J. G. Mayor, A. H. Darwell, John and Alexander Lawson, Peter Taylor, and Isaac Vaughan.

Proposed by Mr. W. A. TAYLOR, seconded by Mr. T. HOPKIN, that Mr. John Moore, M.R.C.V.S., of Manchester, be elected a member of the Association.—Carried unanimously.

It was proposed by Mr. WHITTLE, seconded by Mr. MORGAN, that the amended rules be referred back to Committee, and be submitted to the next ordinary meeting.—Carried unanimously.

Mr. W. A. TAYLOR then read an excellent paper "On certain Intestinal Symptoms and Functional Disorders in the Horse," which has already appeared in the VETERINARY JOURNAL.

The PRESIDENT thanked Mr. Taylor for offering to write a paper at such short notice, and invited discussion.

Mr. GREAVES, in opening the discussion, also thanked Mr. Taylor. He had performed his duty well. It was a subject they all had experience of, as no class of cases were more frequent than those treated of in this paper. He always had given, and still continued to give, purgatives in protracted abdominal pain. In occasional cases he believed in judicious blood-letting. He believed in tapping in cases of Tympanitis.

After a few words from Mr. R. C. Edwards, Prof. WILLIAMS also thanked Mr. Taylor for his excellent observations. The treatment of this class of diseases had greatly improved since his younger days. He regarded turpentine as a valuable remedy, and one of the best antiseptics we can possibly have. He was led to observe this in preserving morbid specimens. In cases of abdominal pain, he regarded opium as the sheet anchor, as it was necessary in such cases to place the bowels in a state of repose, and unless such was

done, it was impossible to overcome Inflammation. If the pulse was not excited, and under, say fifty, he would give a dose of physic and expect good results; but later on the bowels will not stand any irritation. He expressed great confidence in puncturing, and was sorry he did not commence it earlier in life. He would not hesitate to puncture in gastric Tympanitis. After further discussion, in which Mr. Dacre, Mr. Hopkin, Mr. Trigger, Mr. Locke, and Mr. Briggs took part, Mr. W. A. Taylor replied to the various criticisms on his paper.

Mr. HOPKIN then exhibited a specimen of the bowels of a case of Lymphadenoma. During life the horse had passed occasional calculi, and several others were discovered in the intestines *post-mortem.*

The history of the case is as follows :—The attack lasted about a fortnight, with slow abdominal pain, the patient stretching out as if about to urinate. Food was taken up to the last twenty-four hours, when he gradually sank and died. On a *post-mortem* examination being made, there was observed this enormous thickening of the bowel, and enlargement of glands, especially of Peyer's patches, many of these being as large as half-a-crown.

The SECRETARY also exhibited the tail, penis, and scrotum of a horse destroyed two days previously for Melanosis, and detailed the history, etc.

A very cordial vote of thanks was proposed to Mr. W. A. Taylor by the PRESIDENT, seconded by Mr. R. C. EDWARDS, to which Mr. Taylor suitably replied.

Mr. Hopkins and the Secretary were also the recipients of the thanks of the members for their exhibition of morbid specimens.

The usual vote of thanks to the President concluded a most successful meeting. ARTHUR LEATHER, *Hon Sec.*

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of this society was held on July 24th, at the Red Lion Hotel, Cambridge. The President, Mr. John Hammond, occupied the chair. Nearly twenty members were present, and a number of letters of regret from others were read by the Secretary.

Some conversation occurred concerning the stained-glass window given by the Norfolk, in conjunction with other societies, to the Royal College of Veterinary Surgeons. General regret was expressed that the colours were not in harmony with those of the other windows, and some objection was taken to the delineation of a horse forming part of the design. It was, however, resolved to accept the window, and to authorise the secretary to pay for it.

The next subject for consideration was the recent election of Councilmen.

Mr. BANHAM detailed the original compact made between six societies, for mutual help and combined action in the selection and election of members as candidates for the Council. Two societies each year selected gentlemen as candidates, communicated their names to the other societies, and then the whole six collectively recommended them and individually voted for them. At last election it became the turn of the Lincolnshire and of the Norfolk Societies to select candidates. This was done, and the other societies appealed to for the usual support. A want of unity was at once apparent, and in some quarters it was soon made evident that the assistance, which had, in previous years, been given to candidates selected by the societies, was not to be reciprocated. In previous years the united societies had always been successful in carrying their candidates—this year they failed, and the inference is natural that the other societies had not given the support they ought to have done. If this were so, it was extremely unfair to the Lincolnshire and Norfolk Societies, who had always acted to the best of their power in assisting the nominees of other societies, and had a right to expect

the same generous help and honest support that they had given. He especially complained that Mr. Jas. Simpson should have permitted himself to become a candidate in opposition to the selected men, and that, too, after a statement at the Norwich meeting that he did not intend to stand. He complained also that Sir H. Simpson, at a meeting of the Royal Counties Society at Reading, should have suggested that the Norfolk and Lincolnshire Societies had, in the selection of their candidates, failed to comply with some rule or custom necessary to the conjoint action of the other societies.

Mr. WRAGG said he remembered Mr. Simpson's speech at Norwich, when he opposed the Norfolk Counties selection on the plea that no examiner should also be a member of Council. He also remembered his statement that he himself was not going to stand for election, and was much surprised when that gentleman appeared as a candidate.

Other members continued the discussion in a somewhat conversational manner. All appeared to think the two societies who had this year the right to selection of joint candidates had just cause of complaint, and this feeling was later expressed in a resolution, that—"The President be requested to communicate with Sir Henry and Mr. Jas. Simpson concerning their remarks at Norwich and Reading in relation to the candidature of gentlemen proposed by the Lincolnshire and Norfolk Societies."

The PRESIDENT then read his inaugural address.

GENTLEMEN,—My first duty is to thank you, in the warmest terms at my command, for the honour you have conferred upon me, in electing me to preside over our meetings during the present year, an honour which, believe me, I esteem the greater when I remember those gentlemen who have preceded me; and feeling, also, that there are amongst you some far more capable of fulfilling the duties pertaining to the position than I am.

Living, as I do, in a small remote country village, four miles from the nearest telegraph office, with a multiplicity of business, "a quiver full of them," and the winter of life approaching, I feel you have placed me in a position difficult to fill with satisfaction. I must therefore ask your kind indulgence, forgiving my negligences, ignorances, and shortcomings. One thing I can promise you in return, I will endeavour to emulate my predecessors for the welfare of this association.

The Norfolk and Eastern Counties Veterinary Medical Association was instituted in 1868, and in 1869 the number of members admitted was 29, viz., 20 Norfolk, 3 Suffolk, 3 Essex, 2 Cambridgeshire, and 1 Lancashire. At the last meeting of the association, by a singular coincidence the same number (or nearly so) of members, belonged to this association. These medical societies are represented to be harbingers of good, by the free interchange of opinion (when conducted in a right spirit), advancing their members both mentally and socially; asperities are rubbed down, and thus a friendly understanding is promoted. Veterinary surgeons in the Eastern Counties cannot possibly appreciate these advantages, or such indifference, such apathy, would not have crept over them. We have had, however, special opportunity for seeing and hearing distinguished members of the profession from a distance, who have kindly come to take part in our meetings, and by their presence, and the value of their communications, they have given vitality and interest to the proceedings.

The register, issued 1885, showed there were 57 veterinary surgeons in Norfolk, 21 in Cambridgeshire, 22 in Suffolk—total 101. Cannot something be done to induce these gentlemen to join us? It is often easier to diagnose a case than to prescribe a remedy; and in this matter, to which I have given some little consideration, I feel myself in that dilemma. We find the more open, the broader, the wider the basis of prizes given at agricultural shows,

the more entries we obtain. Again, until lately the words "Norfolk" and "Suffolk" were prefixed to the name given to our Red Polls, now they are simply called "Red Polls" to the benefit of the breed. Upon the same principle, I would suggest that this Association in future be named the "Eastern Counties Veterinary Medical Association," omitting the word "Norfolk."

I am informed by Mr. Overed, that circulars were sent, some years since to veterinary surgeons residing in the Eastern Counties, but possibly during the lapse of time many of the professional gentlemen now living in these localities are fresh comers. I would therefore propose that a circular be sent to all veterinary surgeons living in Norfolk, Cambridgeshire, and Suffolk, inviting them to join us. I am confident that, by this means, we should be successful in gaining new members.

Although at present the migration of the society's meetings has borne but little fruit, I feel certain it is a step in the right direction, and will prove sooner or later most advantageous.

I do not presume to dictate, but simply to suggest, because there are indefatigable members here who were at the birth of this Association, and also at its resuscitation, and who still take the deepest interest in its success and welfare: *palmam qui meruit ferat.* Mainly to their fostering care this Association owes it existence.

My next duty is less easily performed (not that there is any lack of material). My difficulty is to select some subject or subjects suitable for your consideration; after which I trust members present will introduce some interesting pathological specimens for our inspection and discussion.

To look back and see what changes have been wrought in almost every branch of our profession, is really surprising. I am unable, and it would be impossible in the limits of your patience, to allude to all advances. I will therefore confine myself strictly to some of those in which I have had personal experience, and carried out in practice during the forty years I have been actively engaged as a country veterinary surgeon.

1.—Diseases Prevented or Mitigated in Severity.—The diseases of the bowels arising from horses being supplied with food of a coarse and indigestible nature, were formerly very numerous. Barley haulm, or what is called in Norfolk "chaff," constituted a large proportion of their dry provender, and this without the admixture of other substances of a less irritating and more digestible character. Acting on my advice, several of my employers have given up this system of feeding, while others have substituted cut hay and pulped roots, using only a proportion of barley chaff with their corn. With these alterations in the diet, the number of cases of Enteritis and other affections of the digestive organs have considerably diminished.

Increased attention to sanitary arrangements has, to a large extent, prevented, controlled, and lessened the mortality of many epidemic diseases, notably Influenza, and other affections of the respiratory organs. Where large numbers of horses were crowded together in stables neither ventilated nor drained, these diseases committed sad havoc. Stables are now constructed under the modern laws of hygiene, and have a sufficient supply of pure air and light, with a proper system of drainage. Of no less importance is it to attend to the water supply of animals. This was fomerly in many cases derived from pits but little better than cesspools; but horse-keepers have learned the value of a pure running stream or spring.

The number of cases of Black Leg or Black Quarter (Symptomatic Anthrax) has materially decreased of late. This is probably due to animals being kept in a thriving condition, so that at no period during their lives do they experience a sudden change from poor to over much and nutritious food.

The disease among cows known as Black or Red Water was very prevalent in winter, especially when the animals were fed on roots grown on wet or impoverished soils; it has now become far less frequent in my practice. This is to be mainly attributed to the more effectual drainage and better cultivation of our lands.

Scarcely a disease among the bovine species is more amenable to prophylactic treatment (contagious diseases excepted) than Parturient Apoplexy. I believe by withholding food of a stimulating or indigestible nature, the exhibition of a few saline purges, and the abstraction of a fair quantity of blood immediately previous to calving, the disease can be modified in intensity, if not altogether prevented. As an illustration of the beneficial effect of bleeding I may cite the following:—An employer of mine, whose cows were very susceptible to Milk Fever (probably on account of his high feeding), regularly bled them prior to calving, and I never attended a fatal case after he adopted this procedure. This practice was, however, discontinued, and in less than six months I was called to treat two cases that terminated fatally in twelve hours. My own herd of Red Polls affords another illustration of the protective efficacy of bleeding. The great-grand-dam of my present stock had three attacks of Milk Fever, to the last of which she succumbed. Several of her progeny were similarly susceptible. For the last ten years I have withdrawn about twelve pints of blood from the animal a short time before calving, and since this treatment has been followed a fatal case has never occurred.

The losses incurred among pregnant ewes, due to dietary errors, have been very heavy. It was the custom among flock-owners, during the latter periods of gestation, to allow their ewes far too large a quantity of roots, without sufficient dry food. This being insufficient in itself to meet the requirements of both dam and fœtus, not only abortion and premature births followed, but also often a state of general paralysis (locally known as Staggers), caused from anæmia of the brain. A small quantity of roots, a liberal allowance of artificial food with cut hay, and a fair amount of exercise, have now been productive of wonderful results.

I have endeavoured to show, in a few instances only, the manner in which we have been successful in the prevention of disease and lessening its mortality by attention to dietetics, sanitation, and other prophylactic measures, and it now remains for me to briefly record the progress attained in some branches of veterinary medicine and surgery.

Influenza, from its great prevalence and fatal character, has always excited much interest and discussion among veterinary surgeons. In an essay on this subject, in the "Abstract of the Proceedings of the Veterinary Medical Association" during its first session, 1836, I find the treatment pursued and recommended consisted of bleeding, the administration of aloes and sedative medicines, with a consequently high death-rate. But since its specific nature has been recognised, and repletive measures substituted, the fatal cases have been considerably reduced. I have found the thermometer of great service in detecting this disease during its incubation, the temperature invariably rising from 105° F. to 107° F. in the thoracic form, before any other diagnostic symptoms can be detected; and, as early segregation of the affected animals is of the first importance, in any attempt to arrest the progress of an outbreak, the value of this instrument cannot be over estimated.

No honest or impartial observer can fail to recognise the innumerable benefits conferred on mankind and the domestic animals through the introduction of antiseptic surgery. Sir Joseph Lister conclusively proved that the putrefaction and infection of wounds, with their evil consequences, pyæmia, septicæmia, etc., had their essential factors in the admission and develop-

ment of certain micro-organisms. The exclusion or destruction of these germs (as they are called) forms the basis and guiding principle of antiseptic surgery. Formerly, we neglected to obey the common rules of cleanliness, and numbers of animals perished annually from some form of blood poisoning; but now, by carefully removing all foreign material from a wound, providing free drainage, applying some antiseptic dressing, and protecting the parts from the deleterious contact of the atmosphere, we are enabled to treat successfully injuries that formerly frequently terminated fatally.

The retention of the fœtal membranes in the mare has hitherto caused much anxiety; but by mechanically detaching the placenta, and thoroughly irrigating the uterus with water holding in solution such agents as bichloride of mercury, carbolic acid, etc., by means of a stomach pump, little fear need be apprehended.

Perhaps one of the greatest advances in practical therapeutics is the administration of the active principles of our drugs by hypodermic or intravenous injection. By this method we obtain the full physiological action of an agent in a minimum of time. In cases of acute pain arising from almost any cause, a few grains of the mixture of Morphia and Atropia will generally give immediate relief. In Physostigmine we possess a potent remedy for the relief of impaction of the bowels; given hypodermically in doses of from 1 to 2 drs., it increases both the peristaltic action and the secretion of the bowels, and I have frequently seen it produce an evacuation in a hour. Of course, its use is contra-indicated when actual Enteritis exists. The salts of Cocaine I have found of great service as a local anæsthetic. The introduction of a few minims of 5 per cent. solution into the eye renders the removal of a foreign body, such as an oat flight (or glume), a comparatively easy task. I have also excised small fibrous growths from the horse, without casting him, by previously injecting a solution of this agent at different points around the base of the tumour.

Surgery.—In Veterinary Obstetrics again we have made much progress. In cases of deformity of the pelvis of the dam, or congenital malformation and displacement of the fœtus, where the act of parturition is attended with difficulty, by modern appliance it is easy enough to remove a limb of the fœtus, and thus facilitate delivery.

The improvement in instruments has considerably aided us in dental operations. Most veterinary surgeons are acquainted with the troubles that often arise from decay or irregularity of the molars, and the difficulty hitherto experienced in their extraction or levelling. By the use of the modern tooth shear and forceps, with a little manipulation and strength, these difficulties can be surmounted.

In dealing with Flatulent Colic, surgery has materially assisted us. In the summer months, when horses are allowed to devour a quantity of wet, succulent grass (after a long fast), it frequently undergoes fermentation, thus producing over-distention of the bowels from the gases evolved. I have repeatedly seen animals die in this condition from rupture of the bowels, or from the pressure of the abdominal viscera on the thoracic cavity. In such cases now, where extreme dyspnœa exists, I at once proceed to puncture the bowel at the most prominent part of the right side with a fine trocar; in most instances the relief has been immediate, and the results most gratifying.

I will conclude by relating the history of

AN OUTBREAK OF "ACTINOMYKOSIS,"

which has occurred in my practice.

The disease has been found to be due (thanks to the investigations of Bollinger and others) to a minute fungus, the *actinomyces*, the spores of which, on being implanted in a suitable soil, grow and propagate.

The ravages of this pest are not confined to our domestic animals, several cases having been reported in the human subject. Strange to say, in mankind it has a marked tendency to produce suppuration; in our animals, to the formation of tumours and tumour-like nodules.

Both Johne and Ponfick have been successful in transmitting the disease by inoculation from one of the bovine species to another, thus proving it to be of a contagious nature. The history of this outbreak tends to the same conclusion; but it is most difficult to account for the number of isolated cases we so frequently encounter.

The ox is the animal most commonly affected; but Professor MacFadyean has lately demonstrated the presence of this parasite in the growth removed from the spermatic cord of a horse, and he is inclined to believe that many of the so-called "Scirrhous Cords" are of this origin. Professor Axe contributed some valuable information upon Actinomykosis in 1882. That the prognosis and nature of this malady were little known to the majority of practitioners is shown by the answers given to the questions, and published in the *Veterinarian* at that time. The anterior portions of the digestive and respiratory tracts seem to be the favourite seat of the disease. When affecting the tongue it was formerly known by such names as Scirrhus, Cancer, Glossitis, Tubercular Stomatitis, etc. Various theories have been advanced as to the mode in which the fungus gains admission into the deeper structures of the tissues. Some consider an abrasion of the mucous membrane necessary, while others believe it quite possible for the spores to enter by way of the small ducts of the glands.

As a result of the irritation and consequent inflammation occasioned by this endophyte, various degenerative changes occur. The tongue at first becomes enlarged, and beneath the mucous membrane can be felt small nodules, either confluent or discrete, and varying in size from a millet seed to that of a walnut. These subsequently soften, and discharge a cheesy-looking substance, leaving a ragged ulcer, from the base of which luxuriant granulations arise. The organ now becomes diminished in size, from the growth and contraction of fibrous tissue, and atrophy of the muscular elements.

If the disease is allowed to run its course, the animal usually succumbs either to inanition, or to secondary growths invading some of the deeper structures.

The farm on which this outbreak of Actinomykosis appeared is healthily situated, adjoining the sea, and consists mainly of a light chalky soil. The disease was first recognised in 1882, when several animals were affected and slaughtered.

In 1885, four bullocks were affected, and suffered a similar fate. I detected a large growth invading the walls of the abomasum in one of these, which a microscopical examination proved to be an actinomykotic tumour. No further case was reported until 1887. About twenty bullocks were then purchased in the beginning of the summer, and grazed on the marshes by the sea. They were taken into the yards at the commencement of the winter (October), one lot being retained at the home farm, and the other sent to the field barn, about a mile distant. They were attended to by different men, so that there was no communication between the two yards. Their food consisted of sliced roots, chopped ensilage, barley, chaff, and cake.

On December 3rd, the man at the barn observed one of the animals to have a difficulty in masticating his food, and to be discharging a quantity of saliva. During the two or three following days he ate but very little, and on seeing him on the 26th, I had no difficulty in diagnosing it to be a case of Actinomykosis.

The bullock was in rather poor condition, the tongue was much swollen, and protruded from the mouth. It was hard and tender to the touch, and in the middle third were two large superficial erosions, with ragged edges. The sides and dorsum generally were studded with nodules of different sizes, which on being incised were found to contain a quantity of caseating material. On closer inspection by means of the microscope, this was found to consist mostly of degenerated cells and actinomyces in various stages of development. A few days after, three other animals were discovered to be affected, and as two of these were in good condition they were sold to the butcher. About this time (December 9th) the disease was detected in two of the beasts at the home-farm, and they were immediately isolated. In the latter part of December, ten beasts were bought from a dealer and placed with those at the home farm. On February 16th (that is seven weeks after), the attention of the owner was directed to two of the newly-purchased animals, and their symptoms being suspicious, he had them removed at once, and communicated with me. One of these had the disease in a very acute form, the free portion of the tongue being literally covered with ulcers. The hard palate was also affected at the spot where it came in contact with the diseased structures. The following is a short outline of the treatment I have successfully pursued:—The animals have been cast and the nodules incised; scraping I have found insufficient. After all hæmorrhage has ceased, the tongue has been cleansed with a sponge. I then thoroughly saturate the parts with iodized phenol, applied with a brush. After the lapse of two or three days, I repeat the operation. In some of the cases I have treated on this farm and elsewhere, two dressings have been sufficient to effect a cure, whilst in other instances where the tongue and adjacent structures have become extensively involved before I had been called in to attend, I have found it necessary to make three or four applications.

Remarks.—The chief points of interest deducible from the above are—

Firstly—The number of animals affected. During the winters of 1885, and 1886, and 1887, and 1888, twelve bullocks suffered from Actinomykosis. I also detected the disease in the tongue of a sheep on the same farm. If the food was the vehicle through which the virus gained access to the mouth, then either the root or ensilage must have been the medium through which it was conveyed, as the supply for both sheep and bullocks was from the same source.

Secondly—The time that elapsed after the second lot of beasts (those bought of the dealer) had been herded with those at the home farm, before a case occurred, was seven weeks. This may furnish us with some guide as to the period of incubation. Possibly an experienced observer would have detected the malady in these animals at least a fortnight before the attendant; and, supposing them to have become affected during the first week after their arrival, the disease then would require about a month to become developed.

Lastly—The uniform success that has attended the treatment adopted. The six bullocks placed under my care recovered, and were ultimately sold fat to the butcher, the other six having been slaughtered through the owner's request, being in good condition. I have tried the use of bichloride of mercury, eucalyptus oil, salicylic acid, and nitrate of silver, but none of these agents have proved so effective as iodized phenol. Applied in sufficient quality it is perfectly innocuous, whether swallowed, absorbed into the system, or inhaled into the air passages. In addition to its specific action when brought into direct contact with the fungus, it is also of great value for its anæsthetic and penetrating qualities.

Gentlemen,—I thank you for your patient attention to these crude and imperfect remarks. I have endeavoured to lay before you some of the

advancements in the veterinary art; but those to which I have referred must be considered simply as illustrations. And although there is much cause for satisfaction, I must not forget to mention, that in the midst of many successes we have instances of comparative failure. The practice of medicine is ultimately the practical application of therapeutic agents, and it is by the careful study of these that some of the greatest victories are to be gained by the coming race. By experiments on the lower animals much has been done in the past; more requires to be done in the future. But here our Government steps in and says, "No, you shall not make such experiments. Let diseases carry off our cattle by thousands, let the human race be decimated by pestilence, let our children die in scores of Scarlet Fever, Diphtheria, and Measles, you shall not, even to save them, touch our cats and dogs." And so for the present this hopeful field of inquiry, to some extent must be abandoned.

Mr. BANHAM opened the discussion by a tribute of praise to Mr. Hammond for his extremely interesting paper. In reference to barley haulm as a feeding material he considered that, though it might be used mixed with other substances for cattle, it was not a desirable provender for horses. In the days of flail-thrashing it might have been less injurious, as then it was bruised and softened. As to the use of the thermometer in practice, he valued it highly, but it was too often supposed to be a direct means of diagnosing disease, whereas its only use was to detect a rise of temperature, and thus show, before any other symptoms were apparent, that disease of some kind existed. The President's remarks on Actinomycosis he looked upon not merely as interesting, but as a valuable contribution to the pathology of the question. Especially would he draw attention to the statement, that about a month was the probable period of incubation. He might also state that the common wens, found on and behind the jaws of cattle, had been found to contain actinomyces, and should be treated as that disease. Concerning vivisection, he would only say that no one objected more than he did to its abuse. He considered no class experiments on living animals should be permitted, and no other experiments until the subject to which they referred had been thoroughly considered, and clear definite ideas formed as to the value of the operation desired and its probable effect. Under such circumstances, experiments on animals were justifiable and necessary; their prohibition simply was an obstacle to scientific progress, and to the general welfare of animals and man.

Mr. OVERED said he felt deeply indebted to the President for his paper, and would like to ask a few questions with a view to further information. As to bleeding as a prophylactic for Parturient Apoplexy, the question arose, how long before calving should the operation be performed? [The President said—"As soon as possible, or even directly after."] His practice was the same, but the difficulty was to guess the exact time. He related a case in which he had advised bleeding, but it was not carried out, and fatal attacks occurred. Afterwards bleeding was adopted, and with perfect success. He had in cases of Flatulent Colic tried puncturing the bowels, but not always with success—perhaps it might be that he had not adopted the practice sufficiently early.

Mr. TURNER, who had practised in Lincolnshire and the fenny districts, in reply to questions from the members, related the procedure adopted to cure wens. The animal was firmly secured, then Sulphuric Acid was poured upon a brick and the wen rubbed with it for ten minutes. A large scab formed which became detached, and the rest of the wen was absorbed. His experience was chiefly applicable to young animals.

Mr. REYNOLDS said he also had had experience of this method of treatment, but as it always resulted in a large blemish, he had given it up, and

now adopted the plan of plugging the wen with one or more plugs of Corrosive Sublimate. This led to the formation and escape of a core, after which the tumour abated, and little blemish resulted.

Mr. WRAGG quite endorsed the President's remarks as to bleeding in the prevention of Parturient Apoplexy. He had seen very good results from it. In his experience, Alderneys were the breed most susceptible to the disease, and he considered some families exhibited distinctly hereditary predisposition to it. He could not sit down without paying a high compliment to the President for his paper, which was not only extremely interesting but most instructive.

Mr. REYNOLDS asked if any gentleman had any experience of intra-tracheal injection for Hoose in calves. He had only twice tried it, and should be glad to hear more extensive experience.

Mr. BARCHAM replied that he had an outbreak extending to sixty-five cases in which he had adopted it, and only one died. He used the injection twice, with an interval of one day. The instrument and the material were both obtained from Messrs. Willows and Francis, and he followed the directions printed upon the bottle. So satisfied was he with the results that he should certainly continue the same treatment.

A vote of thanks was heartily awarded to the President, who modestly replied that he was astonished at the kindness of the members, and really had not valued his paper as much as the meeting seemed to do.

ROYAL AGRICULTURAL SOCIETY.

AT the Council Meeting held on August 1st, Sir John Thorold (chairman of the Veterinary Committee) stated that Professor Brown had presented the following report:—

PLEURO-PNEUMONIA.—The Pleuro-pneumonia Slaughter Order of 1888, which renders it compulsory on the part of Local Authorities to slaughter within ten days all cattle that have been in the same field, shed, or otherwise in contact with cattle affected with Pleuro-pneumonia, has been in operation since March 10th, a period of nineteen weeks up to July 21st, the date of the last return published in the *London Gazette*. It appears from the returns published that since the Order came in force there have been 212 outbreaks of Pleuro-pneumonia reported in Great Britain, 116 of these have been in England, and ninety-six in Scotland. These figures, when compared with the returns for the nineteen weeks prior to the Order coming in force, show an increase of twenty-five in the number of outbreaks in England, and an increase of six in Scotland; but, when compared with the returns for the corresponding period of 1887, they show an increase of only four in England, and a decrease of forty-seven in Scotland. It was not to be expected that in the short time since the Order came in force, it could have produced any material decrease in the number of outbreaks; but it is very satisfactory to note that it does not appear to have prevented the majority of stock-owners reporting the existence of disease, as some people considered it probably would.

With regard to the number of cattle attacked with Pleuro-pneumonia during the nineteen weeks ending July 21st, there have been 421 in England and 340 in Scotland. In reference to the slaughter of healthy cattle which have been exposed to the infection of the disease, there seems to have been, during the past two or three years, a greater inclination on the part of local authorities and owners of stock to slaughter healthy animals which had been in contact with cattle affected with Pleuro-pneumonia. During the ten weeks at the beginning of this year, prior to the passing of the Slaughter Order, there were 1,004 healthy cattle slaughtered on or removed from infected

premises for slaughter either by order of the local authorities or the owners. Since the Order came in force, there have been 3,797 healthy cattle which had been exposed to infection, slaughtered in Great Britain; 1,612 of these have been in England and 2,185 in Scotland.

SWINE FEVER.—During the second quarter of the year there have been 2,021 fresh outbreaks of this disease reported in Great Britain, as compared with 1,025 outbreaks in the first quarter. This is a considerable increase, but still the disease is not so prevalent as it was during the second quarter of last year, when there were 2,708 outbreaks reported. With regard to the number of pigs attacked, there were 10,415 in the thirteen weeks ending June 30th; of these, 5,247 were killed, 3,820 died, and 608 recovered.

ANTHRAX.—It appears from the *Gazette* returns that this disease maintains a very uniform rate of prevalence throughout the year; thus in 1887 the outbreaks reported quarterly were 56, 58, 61, and 61, and in the two first quarters of this year they have been 57 and 54. Of the 54 outbreaks reported during the past quarter, 45 were in England and 9 in Scotland.

Upon the representations of Sir John Astley, the Society's Consulting Botanist had been instructed to proceed to Elsham to report upon four fields of a farm, on which certain cattle and horses that had died suddenly had been grazing. A report from Mr. Carruthers was read to the Committee, stating that in his view the injury to the stock was not due to anything growing in the pasture, because there were no injurious plants growing in the fields. A sample of the water from the farm had been analysed by Dr. Voelcker, who reported that it was, in his opinion, free from pollution.

NATIONAL VETERINARY ASSOCIATION.

(Continued from page 111.*)*

DR. FLEMING, in opening the discussion on Dr. Armstrong's paper, referred to the importance of the study of comparative pathology, and showed that this was recognised by the chief authorities in medicine from the earliest times. To Lancisi, physician to the Pope in the 17th century, was due the honour of being the first to propose stamping out the Cattle Plague when it invaded the Roman States. The greatest physicians had always insisted upon the diseases of animals being studied, in order that those of mankind might be better known. Referring to the establishment of the Royal Veterinary College, and to the great interest taken in it by John Hunter and the principal medical men of that time, Dr. Fleming quoted the opinions of some physicians to show the necessity for those who practise human medicine being acquainted with animal medicine, and, in pointing out that in many continental universities Chairs of Comparative Pathology had been established which were occupied by veterinary teachers, he mentioned what he had done, in conjunction with Sir Henry Acland, to have a Chair founded at the Oxford University. He congratulated the University of Durham on its resolve to confer a benefit on medicine and on the country, by founding a Chair of Comparative Pathology, and thus leading the way to a great reform in medical teaching.

Mr. CLEMENT STEPHENSON, in alluding to the splendid address of Dr. Fleming, went on to discuss some of the topics referred to by Dr. Armstrong, and particularly dwelt on the mistakes made in attributing Scarlatina in man to disease in cattle, and to run directly to the cow, instead of ascertaining whether there were not other sources of infection.

Professor WALLEY said personally he had seen nothing in a cow identical with Scarlet Fever in man.

Professor MACFADYEAN said he had conducted a series of experiments, but had always failed to excite in animals after inoculation a single symptom like Scarlet Fever.

Dr. HEATH, while admitting the importance of bacteriology, thought the study of animal parasites was overlooked, and that those of the dog especially should be attended to, owing to their danger for other animals and mankind.

After remarks from Mr. Cameron, Berwick-on-Tweed, Mr. G. ELPHICK moved, and Professor WALLEY seconded :—

"That in the interest of public health, it is desirable that all large towns should be provided with public abattoirs, and that the slaughter of cattle, sheep, and pigs on private premises should be abolished."

The resolution was carried.

Dr. Armstrong having replied to the criticisms made upon his paper, a vote of thanks to him was proposed by Dr. Fleming, and carried by acclamation.

At the afternoon meeting the paper on inoculation by Mr. A. Robinson, F.R.C.V.S., Greenock, was discussed. The paper itself, of great length but of much interest, dealt with the history and practice of protective inoculation for various contagious diseases, and demonstrated its efficacy, the evidence in favour of the measure for Contagious Pleuro-pneumonia being very strong.

Professor PENBERTHY opened the discussion on the paper. On the ground of the extent of the subject, and the magnitude of the paper, he would ask them to pardon him if he was not so clear as he would like to be. Great energy and perseverance were noticeable in Mr. Robinson's paper. He did not think there was a remark in the paper which might be considered irrelevant, although there were some which might be considered excessive. The importance of inoculation could not be exaggerated, for in inoculation he saw means of lessening disease. From protective inoculation, he thought they had reasonable ground for hoping for good results. In the disease of Anthrax they had positively shown by experimental inoculation that they could ordinarily produce immunity from danger. There was, it seemed to him, some difference of opinion, as regarded the mode in which that immunity from disease was to be brought about. He thought the writer of the paper had used terms too strong as regarded inoculation for Rabies. He (the speaker) did not think they were in a position as yet to arrive at any very positive conclusion, or, at any rate, an inclusive conclusion. Regarding inoculation for Anthrax he must say that, so far as he had been able to carry out experiments on a rather limited scale, they confirmed *in toto* that which Pasteur had said about protective inoculation. There was vaccine to protect against Anthrax which would keep for three months, and which might be used by any ordinary practitioner with perfect safety. He had never inoculated an animal with Pasteur's vaccine where the animal had been at all in danger from the vaccine, or when tested with virulent matter had shown any signs of disease. In inoculation as protective against Pleuro-Pneumonia, they had an extremely difficult matter with which to deal. They had in Pleuro-Pneumonia a disease which experiment, so far as he could gather, had never been able to reproduce in its original character, and this of course rendered proof of protection very difficult. Professor Penberthy next alluded to the evidence which had been arranged by Mr. Robinson from Mr. Bruce, of New South Wales, and Mr. Gordon, of Queensland, neither of whom, he thought, was a veterinary surgeon or a scientific man, and next pointed out that the essayist seemed to have disposed of the evidence of M. Leblanc in a rather peculiar manner. M. Leblanc possessed an enviable reputation as a general practitioner, and yet the remarks made by him derogatory to protective inoculation for Pleuro-Pneumonia seemed to have been treated lightly by Mr. Robinson, who had given too great weight to the generalities of Mr. Gordon and Mr. Bruce. If that which appeared in the

evidence of Mr. Gordon, who was chief Inspector of Stock for Queensland, were true, then Pleuro-Pneumonia in that country was different from what it was in England, so it might be considered they were dealing with a different disease, and therefore Mr. Gordon's evidence on this point was worthless. In conclusion, he referred to the evidence given by the Highland and Agricultural Society's Committee, in which he thought they had the most damaging affirmations by the exponents of inoculation for Pleuro-Pneumonia, but as his time had expired, he could not go into them. He thanked them for their patient hearing.

Mr. CLEMENT STEPHENSON thought it would be better if, instead of going critically into Mr. Robinson's paper, he endeavoured to get a common-sense view of Pleuro-Pneumonia as it affected this country. He questioned very much the value of the information that Mr. Robinson in his travels had obtained. In fact, he thought he could have got more trustworthy information at home. He could not see that the statistics he had given them from the colonies, and from Mr. Rutherford, carried much weight with them. There was nothing in those statistics about cost; and cost, he would beg them to remember, was a very important subject indeed. Inoculation was advocated in the colonies, but he had talked with colonials lately, and they frankly admitted that if they could stamp out Pleuro-Pneumonia they would do so, but they could not. For twenty-five years they had been inoculating, and they still had, and were likely to have the disease. He commenced stamping out in Northumberland in 1878, and the cost reached the twentieth-part of a penny in the pound on the rates. The whole question was one entirely of pounds, shillings, and pence. Some statistics had been given from Holland, but they did not quite correspond with the statistics as given in the Privy Council Department. It was only by stamping out that Holland got rid of the disease. In Denmark, Sweden, and Norway the disease had always been eradicated by stamping out and not by inoculation. In his opinion inoculation for Pleuro-Pneumonia did not stamp out disease: it perpetuated it. Neither had he any hesitation in saying that the only persons who got any good from inoculation were those who performed the operation.

Professor WALLEY agreed with Professor Penberthy in his remarks anent the amount of labour Mr. Robinson had bestowed on his paper. It was true there was matter therein which did not bear much on the subject for discussion, but the introduction of irrelevant matter in a paper like Mr. Robinson's was unavoidable. Mr. Robinson said in his paper that, "animals inoculated with vaccine lymph in no case communicated disease to those animals in contact with them, just as vaccinated persons never infected unvaccinated persons with whom they live." Now, during an outbreak of small-pox in Manchester, certain members of his family got vaccinated, but he was not vaccinated himself, and yet he developed a pock. Proceeding, he thought the temperature of byres had a great deal to do with mortality in connection with inoculation. If people would not keep their byres at a proper temperature heavy losses would ensue, but not otherwise. The most important thing in the whole question was whether or not they were justified in going on with inoculation, or whether they should not adopt a better system of getting rid of the disease. If inoculation were to do any good it should be applied in its proper place, and all cows which had been within a limited area of the disease should be operated upon. During the past thirty years no progress had been made in the direction of getting rid of the disease.

Dr. FLEMING considered the subject of inoculation one of importance, now that they were able to study the nature of the virus. He thought they had every reason to believe that every contagious malady was due to a specific

germ. Over and over again, it had been demonstrated that Anthrax was due to a specific germ. It was not his intention to enter into the merits or demerits of inoculation, but he thought the French Commission had shown in the most conclusive manner that inoculation with the virus of Pleuro-Pneumonia was a protection against that malady, and the members of that commission were neither fools nor knaves. The experiments were absolutely conclusive as to the value of inoculation as protection against Pleuro-Pneumonia. In addition to the evidence of the French Commission they had also the testimony of a large number of the members of their own profession in this country to the same effect. Of course great factors in the protective value of inoculation were the time it should be performed and how it was performed. Most of the failures in the operation, he thought were due, to a great extent, to the neglect of principles which should guide operators in their work. The object of inoculation was to protect from disease. It was all very well to say "resort to slaughter." In a country like Australia, where whole herds of cattle were affected, that was like making a desert and calling it peace. They could not stamp out whole mobs of cattle; therefore, people had recourse to inoculation. In a country like England, where the disease existed only in a limited area, he said stamp it out, and yet stamping out was a reflection on their own scientific ability. If they could prevent animals taking the disease by inoculation, they ought to do so. When protection was difficult, and mistakes were liable to be made, then perhaps the brutal method of stamping out should be resorted to. It struck him that a disease which depended upon a specific virus ought to be stamped out.

Mr. R. RUTHERFORD'S views concerning the question of inoculation were so well known that to go through them, he thought, would be useless. Alluding to the remarks of a previous speaker concerning Mr. Robinson's two Australian correspondents on the question of Pleuro-Pneumonia, he pointed out the responsible positions which those gentlemen filled, and asked if it could be supposed for one moment that they had no veterinary advisers to assist them, or that they had assumed all the authority of writing their valuable reports without the knowledge and sanction of the veterinary advisers of the Government? He ventured to assert that such was not the case. In Australia, through inoculation, they had reduced the terrors of Pleuro-Pneumonia to no terror at all. Now they did not care a snap of the fingers in the colonies for the disease, and, in fact, paid more for herds which had been through places where the disease had prevailed, and more for stations which had been infected than for those which had remained free—so much was inoculation valued in that country. Then, again, in Edinburgh time was when the disease was to be found in most of the byres, but, thanks to inoculation, the dairyman now cared as little about the disease as in Australia. The cost attendant upon inoculation had really been a saving. He did not mean to say that the operation was perfected, but the profession was but doing its duty in endeavouring to perfect it.

Professor MACFADYEAN pointed out that Mr. Rutherford had carefully avoided coming to close quarters with Mr. Stephenson on the question of pounds, shillings, and pence. Personally, he (Professor MacFadyean) would combat as strongly as he had words the statement that it was unscientific to attempt to get rid of Pleuro-Pneumonia by slaughter. He looked upon the method of getting rid of Pleuro-Pneumonia at the least cost as the proper method.

Mr. CUNNINGHAM having given his share of praise to Mr. Robinson for his paper, directed the attention of the meeting to the fact that the most illustrious man of science of the present day was an inoculator and not a stamper out. He thought before Professor Penberthy or Mr. Stephenson passed an opinion on Mr. Rutherford's system of inoculation they should go down and

watch him, and observe how much he had been the means of saving. When they had done this they would be perfectly entitled to pass an opinion thereon. As they had not done so, their opinions must be worth nothing. He knew a district afflicted with Pleuro-Pneumonia where slaughtering failed to get rid of the disease. Mr. Rutherford was called in, and he practically broke the back of the disease, and for the succeeding eight years there were no fresh cases. In the preceding eight years there had been four outbreaks. He had good reason to be an enthusiast in the matter of inoculation, when he had seen the good results therefrom. Mr. Stephenson's assertion that "no one benefited from inoculation but those by whom it was performed," he contested, and claimed that the owners of the cattle had benefited most from it. He maintained that inoculation, if properly practised, was not a delusion and a snare. For the extinction of the disease it was a good measure.

Mr. ROBINSON briefly replied, and stated that he had obtained his evidence with regard to Pleuro-Pneumonia from the best sources, and was not at all displeased with the comments made on his paper.

The PRESIDENT highly praised the paper. Though he had never practised inoculation, he had been observing its operation for some years, and he was altogether in favour of it, although at one time he was opposed to it. Some time ago the byres in Edinburgh were never free from the disease, but now they never had it. It existed in some parts of Scotland, but then it was always imported. He moved a hearty vote of thanks to the essayist.

This was seconded by Professor PENBERTHY, and carried unanimously.

(To be continued.)

BRITISH MEDICAL ASSOCIATION.

AT the annual meeting held this year at Glasgow, in the Public Health section, on the 9th August, the President, Dr. Littlejohn, in introducing a discussion on the

COMMUNICABLE DISEASES COMMON TO MEN AND ANIMALS AND THEIR RELATIONSHIPS,

intimated that Dr. Fleming, Chief Veterinary Surgeon of the Army, was to have opened the discussion, but unfortunately he was detained by illness.

In his absence Principal WALLEY of Edinburgh opened the subject. He said that Anthrax was not at the present moment occupying the minds of sanitarians, but it was most deadly and rapidly communicable from animals to man. Legislation in regard to it was difficult. An outbreak of Rabies was stated to have occurred in Edinburgh in 1881, which was stamped out in three months, and Anthrax might be in like manner stamped out of the whole country in from six to twelve months. The principal malady at present demanding attention was Tuberculosis, one of the greatest pests to man and animals. Principal Walley had no hesitation in saying that it was communicable from animals to man and back again from man to animals in every possible shape, by ingestion, inhalation, and direct inoculation. Out of thirteen animals slaughtered in Edinburgh two or three months ago for Pleuro-pneumonia six were affected with Tuberculosis. Poultry were being slaughtered by this disease in thousands, and, in the speaker's opinion, it might be transmitted by eggs. Much indirect evidence existed of the transmission of Tuberculosis from animals to man by the medium of flesh. There was no power in Scotland, nor, to a large extent, in England, to enable any official to take charge of animals exposed in public markets and affected with Tuberculosis. Principal Walley concluded by moving—"That the Public Health Section of the Association approves of the action of Government in inquiring by commission into the relationship of bovine and human Tuberculosis, and

urges that as soon as possible such measures be taken as the report of the commission might show to be advisable, and that copies of this resolution be forwarded to the Prime Minister, Secretary for Scotland, and the Lord Advocate."

Dr. FARQUHARSON, M.P., said that no doubt existed that various diseases—such as Anthrax—were transmissible from man to animals, but all were slight compared to Tuberculosis. It was now known that the bacillus in a tuberculous animal was the same as that in man, and as the milk of such an animal swarms with the bacilli there seems no reason to doubt that by this medium they were transmitted to the human subject. He (Dr. Farquharson) was afraid that year by year tubercular diseases would become more common in Britain. He had great pleasure in seconding the resolution.

Mr. CROOKSHANK (London) said that Glanders, Anthrax, and other diseases were transmissible to man, but did not arise independently of the lower animals. Tuberculosis, on the other hand, did. It was very common in this country in pigs, cows, poultry, and other animals. The speaker instanced a case in which a rabbit, fed upon milk from a tuberculous cow, died in two months from tubercular disease of the intestines and mesentery. This infective milk was specially liable to produce Tuberculosis in children. Mr. Crookshank also referred to the alleged origin of the human infectious fevers from the cow. As to Diphtheria and Scarlet Fever, he believed that at present we did not know whether or not they were derivable from the cow.

Mr. WILLIAM BROWN, F.R.C.S. (Carlisle), read a paper on the Association of Typhoid Fever with an Infective Fever among Cows. There were cases of Typhoid Fever at a dairy, and in ten weeks twenty cases occurred, and all the affected individuals had derived their milk supply from the infected dairy. The water supply of the dairy was perfect and pure. There was no history of imported infection, and no antecedent case of Typhoid in the immediate neighbourhood could be traced. However, it was ascertained that a febrile disorder, having a striking resemblance to Typhoid, had existed among the cows previously, and the assumption was that the disease from which the cows suffered was Typhoid Fever communicable to man.

Dr. SEATON (St. Thomas's Hospital) believed that milk might be contaminated by human agency.

Dr. EDINGTON (Edinburgh) disbelieved in the theory of Dr. Klein's organism.

Dr. TOMKINS (Leicester) said that there was no direct evidence that tubercular disease could be communicated to man, although he believed it could.

Dr. HIME (Bradford) read a paper on Milk Scarlet Fever, and brought forward instances where Scarlet Fever was in the house of the dairyman, and yet scarcely any cases of Scarlet Fever occurred in their neighbourhood, although some of the dairies supplied as much as seventy gallons of milk daily.

Dr. CARPENTER said that, on authority, there was as much as 80 per cent. of the meat sent into the London market affected with Tuberculosis. He mentioned the case of a school in which Scarlet Fever broke out. The school was shut up, and the curious fact remained that, although the infected children whilst peeling mixed freely with the other children who did not go to this school, yet these said children did not contract Fever.

Dr. MACFADYEAN (Edinburgh) believed that the connection of human and bovine Tuberculosis had been clearly established.

Dr. M'VAIL (Kilmarnock) believed that the infection was due to bovine and not human contraction.

Principal CAIRD showed that the milk of animals affected with Tuberculosis could communicate the disease, and said that he thought that instead of 80 per cent. of infected meat being sold it was more likely but 25 per cent.

Principal MCCALL said he believed that Tuberculosis in the animal was more

dangerous than the same disease in the human subject. He had very seldom found Tuberculosis in slaughtered animals.

Principal WALLEY briefly replied.

In the Pathology section, on August 8th, Professor EDGAR CROOKSHANK made a communication on

TUBERCULAR COWS' MILK.

He reported the examination of milk in the cases of two cows with undoubted tubercular disease. In each case the udder was affected, being indurated and nodular. The milk having been allowed to stand, a small quantity of the deposit was prepared on a cover-glass, and without difficulty abundant tubercular bacilli were found on staining. Tubercular lesions were discovered in the cows on examination after death. Some of the milk, having been mixed with other food, was given to rabbits, and after an interval of some months Diarrhœa set in and death resulted, tubercular ulceration of the bowels and affection of the mesenteric glands being discovered *post mortem*. Dr. Crookshank regards the tubercular bacillus of the cow as identical with that found in man. In view of the fact that milk from tubercular udders must frequently come into the market, he considers that immediate legislation is demanded.

In reply to Dr. Joseph Coats, Dr. CROOKSHANK said that the disease of the udder was not a mere local condition, but part of general Tuberculosis. Its importance, however, consisted in the fact that if the udder was unaffected the bacilli were not found in the milk.

Mr. LOGAN drew attention to the fact that butchers were in the habit of sending meat from cattle which they knew to be tubercular into the market, and that danger might thus arise, especially from the inner surfaces of the ribs having been possibly implicated by extension of pulmonary mischief.

Dr. CROOKSHANK agreed in speaking of such conduct as general, and not prohibited. The virus would, however, be destroyed during the process of cooling. Such a safeguard did not exist in the case of milk, as it is usually consumed unboiled. In reply to Mr. Maylard, he stated further that it was taken for granted that boiling of the milk would destroy its harmful influence, but that this had not yet been definitely proved.

Mr. EDINGTON asked if there were any difference in size between the tubercular bacillus as found in bovine and human Tuberculosis, and if it were possible that one might have been evolved from the other.

Professor CROOKSHANK stated that the opinion that there was such a difference in size, as held by Klein, was probably due to the fact that Klein had examined bovine Tuberculosis only in sections. The bacillus as found in tubercular milk has quite the same size and appearance as that found in tubercular sputum. Inoculation experiments with sputum and milk gave the same lesions (and the same bacilli) in rabbits. Difference of opinion existing as to whether or not the pig is subject to Tuberculosis, Professor Crookshank thought noteworthy a case in which he had an opportunity of making microscopical examination. The animal had had cough, constipation, discolouration of the skin, but no rise of temperature. Lesions were found after death which might to the naked eye have suggested Lymphadenoma, but the microscope proved them by the presence of numerous typical bacilli to be tubercular.

Professor CROOKSHANK next read a paper on

HUMAN AND BOVINE ACTINOMYCOSIS,

which he had studied for a number of years both at home and in Germany. Among the cases which he narrated was that of a heifer with a large growth in the parotid region, measuring eight inches by ten. It was discharging from

several sinuses a quantity of yellowish muco-purulent matter, which on examination was found to contain grains of Actinomycosis. The animal having been killed, the usual appearances in such cases were seen, and the lungs (especially the left) showed nodules at the margins of the lobes and throughout their substance. These had the appearance of tubercular deposits, but were demonstrated microscopically to be actinomycotic. The kidneys, uterus, ovaries, and tongue were healthy. The animal having been said to be "one out of several," investigation was made, and the ailment found to be common in the fen-land, and called "wens," "stickfast," etc. It was said to be treated generally by caustic, and the animals were subsequently sent into the market; eight per cent. were found to be so affected. Several other cases having been detailed, Professor Crookshank summarised his results as follows: Bovine Actinomycosis is common in this country, especially in the fen districts. It occurs as wens or tumours in different parts of the body; it occurs in the lungs, as well as in the mouth and tongue. Unquestionably the disease is found also in man, but there are certain differences. In man there is a mycelium formed and easily demonstrated, whereas the "clubs" are found with difficulty; in animals, on the other hand, the "clubs" are easily demonstrated, but there is a tendency to calcareous degeneration rather than to the formation of the mycelium. The question may thus be raised: Do there exist two distinct organisms, or are these differences due to the difference in soil afforded by the human and the animal body? Questioned by Mr. Edington, Professor Crookshank said that he had made many attempts to cultivate the organism, but had not yet succeeded.

Professor CROOKSHANK then reported a series of investigations upon the occurrence of

ANTHRAX IN SWINE.

He said that, while it was admitted that pigs die after eating the offal from cattle which have died of Anthrax, there has been much difference of opinion as to the cause of the pigs' death, some affirming that it was due to septic poisoning. The bodies of such pigs, on being examined, are found to contain, in the very striking enlargement of the throat which characterises them, a great quantity of gelatinous subcutaneous infiltration. Their tonsils are found to be ulcerated, and, indeed, gangrenous. Such were the appearances in a pig which was caused by the speaker to be fed on offal from Anthrax-affected cattle. Experiments were further made by the injection subcutaneously of equal parts of broth and blood from the spleen of cattle killed by Anthrax. In such cases great infiltration took place in the throat or abdomen, according as the one or the other was chosen as the spot of injection. The animals died, and, on examination, there were found purplish patches on the liver, as well as local boss-like enlargements of the spleen. Similar results were obtained when the injection fluid was taken from guinea-pigs which had been killed by Anthrax; and similar results also when the fluid was prepared from pure agar-agar cultivations, provided sufficient dose was given. From the pigs dying in the last series the organism was again taken, and caused Anthrax in guinea-pigs. Confirmation of these results was obtained from a case in which it was positively known that the spleen of a cow which had had Anthrax was eaten by certain pigs on the same farm. These latter gave the same appearances as in the other cases, especially the enlargements of the spleen. Bacilli were obtained from the organs, cultivated, and found to cause the disease in other animals. Pigs, both old and young, are thus undoubtedly susceptible to Anthrax. In reply to Prof. Roy, it was added that all spontaneous cases hitherto studied had been apparently caused by the ingestion of offal, no other means of inoculation in such cases having been observed.

Prof. MACFADYEAN asked if there were any explanation of the difference in symptoms between Anthrax as occurring in the pig and as occurring in other animals; also as to any difference in the period of incubation.

As regards the symptoms in the pig, Prof. CROOKSHANK thought that the swelling in the throat, which was invariable in the pig, was probably due to the disease being caused by the ingestion of offal. The tonsils in such cases are found ulcerated or necrotic, and it may be here that the bacillus finds entrance. In the cases where the disease was induced by injection, the gelatinous infiltration and swelling did not take place invariably in the throat, but was determined by the position of the injection. In such cases the track of the needle is gangrenous, and there is great exudation around. The term of incubation varies. In one case death occurred within twenty-four hours; in other cases after an interval of four or five days. Great stress must be laid upon a sufficient dose being administered. Failing in observing this may, perhaps, explain the difference of opinion which has prevailed upon the question of the communicability of Anthrax to swine.

Notes and News.

VITAL TENACITY OF PONIES.—A correspondent of the *Live Stock Journal*, in alluding to an explosion at St. Helen's Colliery, Cumberland, in April last, mentions that at the time of the accident there were nineteen ponies in the pit, twelve of which were subsequently found dead, having probably been killed, but six were found alive eleven days after the catastrophe, they having had no food during this long time. One was three years old, one five, two seven, one fourteen, and another fifteen. A seventh, aged six years, had somehow or other got loose and away from his companions, and wandered into another part of the workings, and was never expected to be found alive again, but on the 4th May, when the search was being continued for some of the men, thirty-two of whom were killed by the explosion, he was discovered, having fallen down a hole, about six feet, over an archway that had been destroyed at the time of the mishap. He was, of course, naturally weak and exhausted, but, with a little attention, he was soon in his usual good form, and, along with the other horses, he is working in the ordinary way; in fact; the whole of the seven horses are in capital condition, and apparently no worse for their long fasting.

HOW TO WATER HORSES.—A traveller in Norway says that the horses in that country have a very sensible way of taking their food, which perhaps might be beneficially followed here. They have a bucket of water put down beside their allowance of hay. It is interesting to see with what relish they take a sip of the one and a mouthful of the other alternately, sometimes only moistening their mouths as a rational being would do while eating a dinner of such dry food. A broken-winded horse is scarcely ever seen in Norway. This is not an engineering matter, but horses are machines of much interest as well as value to engineers.

DISHORNING OF CATTLE IN THE UNITED STATES.—Unsatisfactory results from "dehorning" are reported in the *Standard*, San Angelo, Texas, as follows: "Dehorning cattle has been found to be far from a wise move. On the Lipan ranch eighty head of steers were dehorned last year, and these cattle are this year in poorer fix than the others, while immediately after the operation they went down very much in flesh. Milch cows dehorned, it was noticed, gave less milk each day. After two or three years, however, there is no appreciable decline in either flesh or production."

Effects of Lightning.—An American paper says: "Quite a number of horses have been killed by lightning this season. The mare, Oregon Beauty, owned by W. D. Reid, of San Francisco, had been taken east for exhibition purposes, and was in a barn at Coney Island that was struck by lightning and burned. She is reported to have been valued at 15,000 dollars." Another remarks frequent reports come of stock killed by lightning while standing near wire fences. The following is taken from a western paper: "T. J. Parks informs us that his plan of protecting his cattle and fence posts from injury by lightning running along the wire fence, is to attach a piece of wire occasionally to a post, extending above it and running into the ground, thus carrying away the electricity. This is of great importance to stockmen. The loss of cattle and destruction of fence posts has, by the universal use of wire fencing, become a serious matter. A small sum invested in wire will protect both cattle and posts."

Hounds and the Rabies Orders.—The question whether foxhounds are subject to the muzzling orders came before the Cheshire magistrates on August 13th, when Mr. Thomas Hadfield, one of the proprietors of the Runcorn Bone Works, was summoned. Two foxhounds were permitted by him to be at liberty. The defence was that it was impossible to keep these hounds up, otherwise they would all have to be sent back to the kennels. The police, who prosecuted, contended that the hounds were not exempt from the order, and the magistrates, taking the same view, inflicted the nominal fine of sixpence and thirteen shillings costs.

Lyons Veterinary School.—Professor Laulanie has been appointed Director by this School. He has recently had conferred upon him the degree of Doctor by the University of Lyons.

Correspondence.

NEW OPERATIONS IN OUR PROFESSION.

Sir,—I am rejoiced to see that there are distinguished members in our profession who have sufficient courage to step out of the beaten track, and to attempt new methods of treatment with a view of alleviating or removing pain and suffering in animals occupying positions only a degree lower in the scale of creation to ourselves. I say, all honour to these men!

I felt very much interested in an article in last December's Veterinary Journal, by Mr. F. Smith, on "The Cure of Lameness arising from Side-bones." This is followed by another paper from him on the same subject, for the National Association, and which was discussed at Newcastle. I have carefully read these papers, and listened to the discussion with great pleasure. The principle enunciated is a confirmation of the opinion I placed on record in the *Veterinarian* for 1883, but which opinion was pooh-poohed at the time, and my deductions condemned by members of unquestionable intelligence; but it is a thought full of hope and encouragement when we see how true facts announce themselves. Mr. Smith's explanation of its *modus operandi* is corroborative of the idea I then advanced. I now write in corroboration of his views, as to how side-bones and adjoining sensitive structures can be relieved by removing the tightness and pressure of the wall upon them. Whenever any new method of treatment is promulgated it requires time to establish it, and many opportunities to test its soundness before it is received with confidence. Its usefulness or its superiority over other methods of treatment must be vouched for by many as being a reality, before it is accepted by the profession generally.

Mr. Smith says, "It occurred to me if this (compression) was the case the lameness could be removed, if I relieve the laminæ from pressure and the foot from tension by making such incisions in the horny wall of the foot as would permit it to bulge, or at any rate it would permit the enlarging cartilage to be accommodated without pressure on the delicate and sensitive parts covering it." "To increase the size of the foot for the accommodation of the gradually enlarging cartilage." This result is effected by sawing through the wall in two or more places; but besides this, he completely isolates with his searcher the wall from the sole between the incisions in the wall, and in four weeks in some cases it becomes enlarged, to the extent of two inches. The cartilage is allowed to enlarge consequently on the wall having accommodated itself to the increased size of the cartilage.

Now I have much pleasure in endorsing and supporting Mr. Smith's views on the value and importance of the expansion of the hoof in the treatment of side-bone; and in discussing these matters with a view to the clearing up of one or two points, I feel assured I shall be excused if I differ from him, and show why I differ from him. *In the first place*, I differ from him on the point he has selected for his anterior incision through the wall. It will be attended with danger of wounding the capsule of the joints if made at the anterior point of the lateral cartilage; an inch farther back or forwards, and there would be no danger. Again, he completely isolates the hoof and sole only between the incisions. He admits that they soon fill up and come together, especially towards the inferior part of the wall. *This is solely on account of the isolation being limited.* Did he carry the isolation to the extent of the whole of the quarters and heels under the side-bone or side-bones, his operation would be more abundantly successful.

Again, in the performance of the operation I can see it would be attended with much trouble and difficulty, if not be impossible with a restive horse, to saw the incision inside the foot whilst the foot is held up to the elbow by the assistant. I object to the saw, as an instrument likely to cause a jagged and lacerated incision. I think it would be much better to have the animal cast and properly secured; it would give one a fair chance to perform the operation properly and safely. I should certainly much prefer making the incisions with the searcher down to the sensitive tissues, then take a strong, clean, sharp scalpel, and cut down completely through the periosteum and perichondrium and those dense tissues which cover the bone and connect the sensitive laminæ and pedal-bone; it is, in fact, periosteotomy relieving the ostitis. Mr. Smith says nothing about this, but I think it is important, and much more likely to give complete liberty to the tumefied and ossifying cartilages.

In an article recorded in the *Veterinarian* (for removing the sole) for September, 1883, the following passage occurs: "He (Mr. Greaves) could conceive it might be beneficial for side-bones in this manner. When the sole is removed the bond of connection at the heels and quarters of the wall no longer exists, and when the weight of the horse is thrown on that foot the heels descend, and for want of the bond of connection the *foot spreads out or expands.* At the end of a week or a fortnight it is quite surprising the extent of the expansion; the new horny sole grows stronger and thicker than the one removed, for it has to fill up a wider space by three-quarters of an inch than the old sole. As it grows *it fixes permanently the quarters and the heel of the wall* in the wider shape and size. By this means it naturally relieves the binding tightness of the hoof upon the tumefied and ossified lateral cartilage; in fact, it adapts the wall to the altered condition produced by the side-bones, and gives ease and comfort, just as the pressure of a tight boot, made of strong, thick leather, taken off a corn gives relief."

My contention is that by removing the sole you liberate the whole wall,

and the whole foot expands bodily from the ground surface to the coronet more effectually than by making incisions in the wall simply, making a section of the wall only to bulge, creating a deformity. I know a veterinary surgeon of large and very long experience, who has adopted this method of treatment for the cure of side-bones for a long time with marked success.

Are not the opinions set forth in the above extract the same in principle as those held by Mr. Smith? Are not the theory and effect the same in both—viz., enabling the wall to expand and adapt itself to the altered state of the lateral cartilage? Have we not, unknown to each other, been studying and travelling on converging lines? Is not Mr. Smith's method a confirmation of my idea of how side-bones can be relieved?

When I was an apprentice, more than fifty-four years ago, I have often seen my master cut fissures through the wall, cut them from the coronet to the ground surface, for contraction of the heels of the foot. I have frequently performed the operation myself, not always, but frequently with marked benefit. I do not think incisions through the wall will benefit Laminitis.

The other new operation, for "cure of Roaring," we are anxiously awaiting a further confirmation of. We hope the success will be equal to the sanguine expectations of Dr. Fleming and others. These efforts show that there is life yet in our profession, and that there are men in it whose courage and worth are beyond all praise. THOMAS GREAVES, F.R.C.V.S.

ANSWERS TO CORRESPONDENTS.

F. S. W.—Look in next month's JOURNAL.

CONSTANT READER AND OLD SUBSCRIBER.—Attempts have been made on two or three occasions to get veterinary surgeons exempted from serving on juries, but they were unsuccessful, the last attempt being made in the House of Lords by Lord Aberdare, on the representation and at the solicitation of Dr. Fleming; but, when carried to a division, the motion was lost by a small majority. It is to be feared that it has less chance of being carried in the House of Commons. That members of the profession should have this exemption there can be no doubt, though to what extent the liability acts as a hardship we do not know.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. W. Burke, A.V.D., India; Kay-Lees, A.V.D., Ireland; T. Greaves, Manchester; C. Rutherford, A.V.D., Aldershot; D. D. Lee, Harvard University, U.S.A.; P. Beattie, Bogfern, Turriff; G. Snowball, Ballarat, Australia; H. Kidd, Newbury; J. E. Dibben, A.V.D., Bengal; J. B. Wolstenholme, Manchester; A. E. Macgillivray, Banff; R. S. Barcham, Walsham; "A Constant Reader and Old Subscriber"; S. Bailey, Oldham; A. Leather, Liverpool.

BOOKS AND PAMPHLETS: Progress of the Abattoir System in English Towns; *Dr. Reinold Schmalz*, Die Lage der Eingeweide und die Sektionsteckick bei dem Pferde; Encyklopädie der Gesamten Thierheilkunde und Tierzucht.

JOURNALS, ETC.: *American National Live Stock Journal; Journal of National Agricultural Society of Victoria; Quarterly Journal of Veterinary Science in India; Recueil de Méd. Vétérinaire; Annales de Méd. Vétérinaire; Live Stock Journal; Lancet; Wochenschrift für Thierheilkunde und Viehzucht; Giornale Veterinaria Militare; Hufschmied; Revue Vétérinaire; Repertoire de Police Sanitaire Vétérinaire; American Veterinary Review; London Medical Record; Edinburgh Medical Journal; Clinica Veterinaria; Repertorium der Thierheilkunde; Echo Vétérinaire; Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie.*

NEWSPAPERS: *Melbourne Argus; Scotsman; Leeds Mercury; Liverpool Echo; L'Avenir; Baltimore Weekly Sun; Liverpool Echo.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

OCTOBER, 1888.

ON THE VALUE OF INOCULATION IN PLEURO-PNEUMONIA, AS DISCLOSED ON POST-MORTEM EXAMINATION OF THE BODIES OF THE VICTIMS.

BY PROFESSOR MCCALL, F.R.C.V.S., GLASGOW VETERINARY COLLEGE.

In the month of June, 1887, at the request of the Secretary to the Highland and Agricultural Society of Scotland, I gave evidence before the committee appointed by the directors of that Society "to inquire into and report as to the practicability of making an exhaustive inquiry in regard to Pleuro-pneumonia." An epitome of that evidence has been published and circulated, and as its accuracy has been called in question by Mr. Rutherford, veterinary surgeon, Edinburgh, while giving his evidence in 1888 before the Departmental Committee of the Privy Council, before whom I had also the pleasure of giving evidence, and as the point raised, viz., the value of inoculation as determined by *post-mortem* revelation, is of paramount importance to every member of the profession, I desire through the columns of our veterinary journals to ventilate the subject, and, if possible, to thresh it out.

In answer to the question put to me by the Committee in Edinburgh, "Have you had a practical experience of the results of inoculation?" I answered, "Yes; in one outbreak in a dairy in Glasgow," and on being further asked to state the particulars, I am reported to have said as follows:—

The outbreak was amongst Mr. Salmond's stock at 207, North Woodside-road, Glasgow. He reported that he was suspicious of having Pleuro-pneumonia in his stock. That was on the 8th February, and at that time he had thirty-seven cows in his byre. On examination, it was evident that one of the cows had a chest affection, and as far as I could make out, it was Pleuro-pneumonia. On killing the first cow I found both of her lungs affected. She had well-

marked evidence of contagious Pleuro-pneumonia. The following day we took out other two cows. We had now good ground for going upon, and we had no hesitation in the matter; one animal's lungs were badly affected, and the other animal was only recently attacked. I find the temperature generally ranges from 103° to 106°. Mr. Salmond, hearing so much about inoculation in Edinburgh, was anxious to have his stock inoculated; and after interchange of letters, he was permitted to do so. I said, "You will be allowed to inoculate your animals at your own expense; but you are clearly to understand that you are not entitled to any compensation from the Local Authority. If the inoculated animals show well-marked signs of Pleuro-pneumonia, they will be removed to the slaughter-house, and I will remain the judge." In Glasgow I value the animals, and pass what I think are fit for human food. I said I would not inoculate them myself, or any one connected with the College, for the reason that I am acting for the Local Authority. So Mr. Rutherford came through that afternoon, and the lungs of an animal that had been killed in the morning were obtained for the lymph for inoculating the other cattle. Wishing to experiment with the same lymph, and for a test case, I brought from my farm a cow, seven years of age, that had been always healthy, and within six weeks of her calving. I had her brought to the College along with two yearling Ayrshires and a yearling bull. I said to Mr. Rutherford, "I wish you to inoculate this cow and the two heifers, but not the bull. We will allow the bull to congregate with the two heifers. I wish the brown cow inoculated, and as soon as she has recovered from the operation I will have her put into Salmond's byre." On 9th February Mr. Rutherford inoculated Salmond's cows, and also the cow in calf, and the two yearling heifers belonging to me. I went with him that afternoon, when he inoculated Salmond's cows, after he had inoculated the animals at the College. He first of all took the temperature of all the animals, to see whether they were in health. On completing his examination, he said there was only one above the normal; "she is 102⅓°; that is the one at the top. I think we might safely inoculate her, as well as the others." I replied, "I want you to get a fair chance, and I think it is a pity that she should remain and be inoculated." Mr. Salmond objected to the cow going away, as she had been milking well; but I insisted that it should go. I said, "Are you satisfied that you have got all the others fit subjects for inoculation?" He said, "Yes." The cow Mr. Salmond objected to being removed showed, on *post-mortem*, an old encysted portion of the left lung. I was interested in that animal. It had been bought at the Wishaw sale. The portion of lung was encapsuled, but, at the same time, the

capsule was broken, and I am inclined to the opinion that this was the animal that brought the disease into the byre. I think Mr. Salmond said it was about eight weeks that the animal had been in the byre. Mr. Rutherford inoculated all the other animals that he considered fit subjects; but there were several cows he did not inoculate, as they were about to calve, or had calved within eight days. When I said that I wished my brown cow inoculated he said, "It is not giving her a fair chance; being so near the calving, she may die." I said, "I would risk it." He inoculated her and amputated her tail, and the cow never showed any bad symptoms. The operation was successful, and the calf was born healthy and well. On the same day Mr. Salmond said, "We are badly off for milk, and I have such faith in inoculation that, if you would allow me, we will buy some cows and put them into the byre." I said, "Upon the same conditions as formerly I will take that upon me; but you are to understand that there is no compensation in any circumstances. Those cows, once in the byre, can only go to the slaughter-house; they cannot go to be sold in the public market, but when you are done with them they must go to the butcher." And letters passed to that effect. He purchased on that date—9th February—three cows at the Wishaw sale, and on the 14th he bought two cows at the Paisley sale, for the purpose of being inoculated and thoroughly protected. On 17th February (along with Mr. Rutherford) I visited the byre, and found a cow showing symptoms of Pleuro. I said this cow must be taken away at once. This was one of those inoculated on the 9th, and on *post-mortem* examination both lungs were found to be affected. Mr. Rutherford said the inoculation had not taken. The explanation in this case was that the animal had not taken the inoculation, and that it had been affected with the disease before inoculation. Mr. Rutherford saw it before being slaughtered. On March 1st I required to take another cow and kill it, and I found both lungs bad. This animal was inoculated on the 9th. According to Mr. Rutherford, it was successfully inoculated, the tail was amputated, and it was considered safe; so that if the cow of the 17th was confirmatory of the fact that when an animal contracts Pleuro-pneumonia by the natural method it cannot be inoculated, the case of the 1st March was the very reverse. Both lungs were bad. With the others, it had the tail amputated, was considered to be free from disease, and still it succumbed to the disease. It was one of those in the byre when the disease first broke out. The tail of the animal was amputated on the 16th, and on the 28th I found the animal showing symptoms of the disease, and it was killed on 1st March. On 3rd March I found four cows showing symptoms of Pleuro-pneumonia. I ordered two to be removed, which had

been inoculated successfully, according to Mr. Rutherford, and had their tails amputated. The *post-mortem* took place on the following day, the 4th, and the lungs of both animals were found to be bad. The carcase of one was condemned. The disease had evidently been in existence prior to inoculation; so that we have here again two cows that were inoculated, and took, and their tails amputated, and yet they showed well-marked symptoms of the disease. Then, on 7th March, I ordered the other two cows to be slaughtered. The *post-mortem* examination was as follows: "The brown cow bad of one lung, and encystment commencing in two places. This animal was inoculated by Mr. Rutherford on 17th February, and took. The black-and-white cow had had one lung affected, but less than any animal yet slaughtered, also inoculated 17th February, and took. On 9th March my own brown cow, which was brought to the college and inoculated on the 9th of February, was taken to Salmond's byre, and put amongst the others; she calved a perfectly healthy calf, and she is at the present moment as sound and healthy as any cow. On 15th March a brown cow, in good condition, was ordered to be killed. Back arched, temperature increased, symptoms of lumbago and rheumatic iritis, breathing disturbed, cough, but I could not make out lung affection. Mr. Salmond said, "This cow is in fair condition, and it would be a pity to let her pine away. If she has got any lung affection you will be quite willing to compensate." I said that we would do so, and we took her away. In the *post-mortem* examination the right lung presented three distinct encapsulated masses. This animal was inoculated on 9th February, and took, and was considered in health till 13th March. Two days after that she was killed. I do not think the lung had been long encapsulated; the masses were distinct from one another. You may have a portion of encapsulated lung surrounded by healthy tissue, and you are not able, if the cow is fat, to make out the condition of matters. On 22nd March I was requested to visit Salmond's on account of a cow exhibiting symptoms of something in her throat, but I found no obstruction. The temperature was increased and the breathing disturbed, and as Pleuro-pneumonia was in the byre, she was taken away and slaughtered. The *post-mortem* examination showed a lesion in the right lung, upper lobe, the size of two hands. The inoculation had taken, and the tail had been amputated. This cow was not inoculated till 16th February, and had to be inoculated again, along with eleven other animals. On 21st March a brown cow, purchased at Wishaw, on 9th February, exhibited symptoms of Pleuro-pneumonia. This is one of the three cows bought at Wishaw for preventive inoculation, but as no compensation would be given, I allowed her to

wait till 4th April. I would not have allowed her to live so long, except for the inoculation, in case it should be said that I was in too great a hurry.

April 4th. Brown cow again carefully examined. Temperature, 103°; breath catching, etc. Ordered to be slaughtered.

April 5th. *Post-mortem* examination shows left lung, upper lobes, consolidated. The upper lobe of the right also slightly affected. This animal was taken into the byre on the 9th of February, the day of purchase, but she was not inoculated by Mr. Rutherford till the 16th, so that she remained six days exposed to the contagion before the preventive remedy was applied. To make certain, she was again inoculated on the 24th, and again on the 29th. The tail was amputated. There were no cows excepting my own cow, that was inoculated previous to going into that byre. The Ayrshire cow stands as a monument of what can be done in regard to a sound animal. I approve of inoculation, provided it be performed on the animal before it has been exposed to the infection. This animal entered the byre apparently healthy, on 9th February, remained seven days exposed to the contagion, was inoculated on the 16th, again on the 24th, and again on the 29th February. She remained apparently healthy till the 21st March, in all two days less than six weeks. The inference is that six weeks is the incubative stage. She had apparently taken the disease almost as soon as she entered the byre, but the week's delay in inoculation allowed the animal to contract the disease by the natural method, and therefore she was affected when inoculated. My opinion is that the lymph of Pleuro-pneumonia is a material that requires to be handled with the very greatest care. I think if it is mixed with blood or pus it will be inoperative, or if you allow it to be exposed to the atmosphere. It will only give real and effective inoculation if you kill the animal and make use of the lymph immediately after death. It should be used the very day, and taken from a portion of the lung that is as little affected as possible, and free from pus and blood. I am sure that many of the failures are due to not attending to this.

Reasoning from other facts (known to me), I would say that lymph taken from the lung, hermetically sealed in a bottle, would not fail; but at the same time I would prefer the lymph taken from the subject fresh, and there and then inoculated. I should not be surprised if it did not take effect if kept any time. In Glasgow there is no inducement to inoculate, because the cattle are kept in the byres. They do not go out to the fields. They give milk, and when they do not give milk to pay their way they go straight to the slaughter-house.

I do not think an animal slightly diseased and inoculated would

be saved, or that inoculation would stay the progress of the disease. I think in most cases it would intensify the natural malady. If a healthy animal is inoculated with the proper lymph it is safe, but I cannot tell for how long. Given an animal with sound lungs and inoculated, and the inoculation has taken, I consider it is safe to mix with other animals. I am going to allow the animals that were inoculated at the College to remain and grow up, and when I have an outbreak of Pleuro-pneumonia, and they are in milk, I will put them into that byre. I would in certain circumstances advise Local Authorities in this country to adopt inoculation, and in other circumstances I would not. I think it is too late to inoculate when you have got the disease in a byre, for this reason, that if the animals have been in a dairy and breathing the same atmosphere, if one has succumbed to the disease, seeing there is an incubative period of six weeks, several others will be labouring under the malady when you inoculate. There is no doubt that some animals resist the disease for a time, and by inoculation you may save them.

Having now transcribed the facts and circumstances connected with the Salmond outbreak as they came under my observation, I shall now place on record such portions of the evidence given by Mr. Rutherford before the Departmental Committee as refers to the same subject.

Mr. Rutherford's Evidence.

(Chairman.)—I notice that, among other statements, you say "successful inoculation confers immunity"?—Yes.—Is that your opinion?—That is my decided opinion.—Is it your opinion that an animal will not accept inoculation more than once?—It is my opinion.—Is that your experience?—That is my experience.

(Professor Brown.)—During your experience with inoculation what results have you gained?—I have never failed to arrest an outbreak. There was only one outbreak in my life where I never came to a satisfactory conclusion, and that was where the inspector on the tenth or twelfth day after inoculation stepped in and killed the lot. I never got a chance of coming to a conclusion about that. But my remarks, of course, apply to the aggregate results, and the individual results also of nearly 150 outbreaks. Have you known any instances of inoculated animals, that is to say, animals that you have inoculated yourself, taking the disease afterwards?—Not after I had pronounced them safe. By saying that the operation confers immunity when it is successfully performed, what do you mean exactly by the word?—I mean by the word "immunity" that it will not contract the disease or give the disease.—That it is absolutely protected, do you mean?—I think so.

I have absolutely no knowledge whatever of a single instance to the contrary. Still, you say that it is not always possible to detect when Pleuro-pneumonia exists ?—There are very few cases indeed of animals that are under the constant care and constant supervision of a veterinary surgeon where it would not be possible ?—Very few indeed.—But still there are some ?—There are some where you can make a mistake about it; it might be something else, for instance ; but there are very few ?—I think exceedingly few. I should not like to say how few. They must be very few, for I cannot tax my memory that I have met with many, if any at all, that I have never been satisfied about.—Still, it comes to this, at least, that if inoculation were adopted, as you suggested, some diseased animals would certainly be inoculated ? —Yes; but they would not remain alive afterwards.— How do you mean ?—A man who undertakes to arrest a case of Pleuro-pneumonia by inoculation is not satisfied with the first inspection—he has no right to be satisfied with his first inspection of these animals. I myself examine them individually, every animal generally auscultatively and thermometrically, and not once, but many times, until I finally dismiss them. If my suspicions are at all aroused that animal must go down. The result is that in my experience I do not know of any animals that have ever afterwards come into the hands of the slaughterers that exhibit signs of Pleuro-pneumonia ; that is, speaking of my own practice.—Still, there are cases, are there not, where you have not followed the animals to the slaughter-house ?—Yes; there are a large number of cases, no doubt ; but I have done all I could always, through my clients, to follow these animals up and make inquiry about them. I never once in all my life ever had any complaint come back to me about an animal that had been under my treatment by inoculation. Never once has any such animal been found to be the subject of disease after being fattened, say.—Still, the records of the slaughter-houses show that a large number of inoculated animals have been found to be diseased after slaughter ?— I should like to draw a distinction between inoculation, speaking generally, and my own practice. I say that no animals that have been under my own immediate care have been found to have been the subject of disease after being slaughtered. I do not know of a single one. That, of course, raises the question, again, of the operator.

(Sir G. Macpherson Grant.)—In your evidence before the Highland Society you are reported to have said, "I am prepared to admit the possibility that a percentage of animals may have the disease in a limited area of the lung ; such cases have come under my notice, but it is not my experience that these animals, after

passing through inoculation, disseminate disease." That is to say, that these animals were diseased without being discovered?—I am very glad that you have opened up that question—exceedingly glad, because I think it is the one question that should be definitely settled, either by a consensus of evidence or by some demonstrations. I must tell you that in my dealings with the disease I occasionally, in isolated outbreaks, have come across cases where it was possible, or where, if there was such a thing as an animal being left with a disease of an extremely limited area, which I could not detect, that I should expect to find the disease break out amongst fresh animals placed amongst them. I can put my finger upon outbreaks of that kind, and I am very glad that you have asked Mr. Biggar to come here, because his is one of those outbreaks. Mind you, there are very few; there must be very few, because I have not met with them. I simply admit the possibility and the probability, from the appearance of the animals themselves, and from the history of the outbreak; but I have never met with such cases. I have never met with such animals that are left and dismissed by me after inoculation communicating the disease to others.

(Mr. Bowen-Jones.)—Will you please refer to page 34 of the evidence given before the Highland Society? It is not your evidence, but I have no doubt your attention has been drawn to it. On that page there is a reference to Salmond's case?—Yes; there are lots of things there I should like to correct.—Do you agree with Mr. McCall in this: "According to Mr. Rutherford this animal was successfully inoculated, the tail was amputated, and it was considered safe"?—No.—You do not agree with Mr. McCall in that statement?—No, I do not.—Do you admit that the animal was inoculated?—Yes.—Do you admit that the animal contracted disease?—There I do not admit the correctness of Mr. McCall's statement.—Do you know the animal I allude to?—I do not now. I will tell you why I do not know the animal. Mr. Salmond is a very old gentleman, not able to manage his own business; his son manages it for him. It is not the first occasion on which I inoculated for Salmond; as Professor McCall has stated there, it is the second.—Is this statement of Professor McCall's correct: "On March 1st I required to take another cow and kill it, and I found both lungs bad. This animal was inoculated on the 9th. According to Mr. Rutherford, it was successfully inoculated, the tail was amputated, and it was considered safe; so that if the cow of the 17th was confirmatory of the fact that when an animal contracts Pleuropneumonia by the natural method it cannot be inoculated, the case of the 1st March was the very reverse. Both lungs were bad"—

is that correct?—I presume it is, because there were several cases.

(Chairman.)—Is the description of this particular case on March 1st correct?—I do not recollect the dates, but I know it was an outbreak I had a lot of bother with.

(Sir G. Macpherson Grant.)—"This animal was inoculated on the 9th"—is that correct?—That would be correct. "According to Mr. Rutherford, it was successfully inoculated, the tail was amputated, and it was considered safe"—is that correct?—That is not correct.—Then you do not consider that the animal was successfully inoculated?—No; because I had already, ten days after the operation, informed the owner that several of the animals were diseased, and that he should report them.—"The tail was amputated"—is that correct?—Yes.—"And it was considered safe"?—No, that is not the case, because I could not say the animals were safe when, at the same time, I informed the owner that they had the disease.—Then you directly traverse Mr. McCall's account of that animal?—Yes.

(Mr. Stirling.)—But with regard to the change that you have just observed as taking place in the lung, do you mean that inoculation arrests it at that stage?—Yes, I infer so; but I tell you again I have not met with it. In *post-mortem* examinations I have never been able to meet any inoculated animals with the disease.—You have inoculated, I think, 5,115 animals?—Yes.

(Mr. Bowen-Jones.)—We get conflicting opinions in this report of the Highland Society as to the points which you say have been definitely settled?—However, these minor points are very easily settled. The point which, to my mind, must be settled by a series of experimeats conducted in the face of the disease is whether, under a vigorous system of dealing with the disease—killing the diseased, killing the suspected, and inoculating the remainder—it is possible for any to be left that are capable of afterwards communicating the disease, and whether they have actually communicated the disease or can do it. That is the one point. I hold that if inoculation is successfully and vigorously carried out such animals cannot exist; and if the worst came to the worst, and occasionally, from a mistaken operation, one or two, here and there, did escape and cause an outbreak somewhere else, put the same thing in operation again, inoculate, and you arrest the thing at once; but it would not occur very often; it would be exceedingly seldom. It never occurred with me, and I do not think it would occur so frequently as to become a question that would ever be a serious one.

(Chairman.)—You said if you inoculated an animal with Pleuro-pneumonia in its system the disease would develop itself within three

weeks ?—Yes, it would ; generally earlier.—Is it true, then, that in Mr. Salmond's outbreak in Glasgow, referred to by Mr. McCall, although you inoculated on February 9th, cases occurred as late as the 9th of April, two months after inoculation ?—That statement does not convey to you the actual facts of the case. It is an incomplete statement, very incomplete indeed, and a very misleading statement. There actually were three lots of cows.—Then do you imply that the returns which are sent by the Local Authorities cannot be correct ?—I have no doubt that they are correct to this extent, that that is the date on which Professor McCall put them down, but my explanation of the case is a very different one. There were actually three lots of cows in that man's premises ; that is to say, there was the lot that I inoculated, there was a lot that was left simply because they were unfit for inoculation, and were subsequently inoculated, and there was the lot that he purchased in to be inoculated immediately after the outbreak was reported. —I want to ask you whether any of the cattle inoculated on February 9th showed the disease on April 9th ?—Yes, they did ; but they were reported by me, not very many days after the inoculation, to the owner. I have over and over again said that it must not be held that because cattle do not exhibit the disease at the time of inoculation and examination, they are free from it ; but I say this, that before a given time they will exhibit it. These animals did exhibit it, and they were pointed out by me to the owner for him to do his part ; that is to say, bring them to Mr. McCall's notice. He never did so, and I do not think Mr. McCall was attending the byres as closely as I was ; I was in the byres every other day almost.

(Mr. Bowen-Jones.)—Do you know of any cases where inoculation has taken successfully more than once on the same animal ?—No, I say it is impossible.—Is inoculation always effectual ?—Yes, inoculation will undoubtedly always arrest and stamp out Pleuro-pneumonia.

In a forthcoming number of this Journal I shall refer, in the first place, to the objections which Mr. Rutherford has taken to my evidence, and in the second place I shall give in detail the history of a recent outbreak of Pleuro-pneumonia on the same premises, and I shall by *post-mortem* and other evidence prove that Mr. Rutherford's inoculation of Salmond's stock in February, 1887, not only did not arrest the spread of the disease at that time, but that it actually carried it on, and was the cause of a second outbreak in June of the present year.

ON PROLAPSUS OF THE RECTUM DURING CASTRATION, AND INVERSION OF THE BLADDER DURING PARTURITION.

BY A. E. MACGILLIVRAY, BANFF, N.B.

THESE accidents are by no means so uncommon as might at first appear; their comparatively dangerous nature renders them at first sight rather unwelcome and unheard-of occurrences. But that they do pretty often take place, and stagger the practitioner rather severely, cannot be denied.

Mr. Peter Beattie, in the September JOURNAL, favours us with rather meagre details of two such cases—the one with a seemingly favourable ending, and the other with the reverse. I cannot say that I consider at all satisfactory the details given in either of Mr. Beattie's cases: he leaves too much to be supplied by the imagination of his readers; more especially is this so in the case of "inversion of the bladder." We all know the very serious nature of this accident during parturition, and I consider it rather a strong call upon our credulity to be told that, after "the bladder was removed, partly by the écraseur and partly by ligature, "*the patient never showed a bad symptom.*" How, in the name of wonder, did she manage to get rid of her urine after such an operation, without showing any abnormality and "bad symptom," as Mr. Beattie is pleased to call it? There are records of numerous cases of excision of the bladder, with full details of the operation and its effects, but I am safe to say that this is the first case in which "the patient never showed a bad symptom" after the operation.

Mr. Beattie, for our benefit, ought to have told us what steps he took when he endeavoured to return the bladder to its normal position; and, failing to accomplish this, when he proceeded to excision by écraseur and ligature he should have given us full details of his *modus operandi*, more especially when it was such a decided success. It is all very good saying in half-a-dozen words that the bladder was removed by écraseur and ligature—but how? Did he operate close at neck of bladder, or below entrance of ureters? I rather suppose he operated by ligature and écraseur—ligature first, and applied écraseur below his ligature—and not, as he would lead us to suppose, by écraseur and ligature. Then, as to after effects, does the patient's urine dribble away continuously and keep vulva in perpetual irritation and thighs excoriated? Or does it gather in quantities inside vagina, and only escape now and again from vulva? Mr. Beattie's report leads one to suppose that the mare urinates as formerly, which is simply utterly impossible.

Not long ago I was called, late one night, to a foaling mare, from which, messengers said, it was impossible to get the foal away. As a matter of course, I lost no time in getting alongside the mare. I found two legs protruding from the vulva, with ropes attached, and was told that they were forelegs, but that the head could not be got up into position. The mare was frightfully excited and straining very severely, and, besides, was getting up and down every two or three minutes. I explored and felt for foal's head, but failed to discover any signs of it. I, with assistance, got the two legs pushed pretty well back into their original position in the mother. An assistant with small arm held them there, and, while I again proceeded to explore for head, I discovered a large, round, soft-like body occupying the vagina and, in fact, almost protruding from vulva. On getting a light brought near, and expanding the vulva, I at once saw that the bladder had become everted, and that it must have done so after we got rid of the fœtal legs, as it was quite fresh and uninjured, and not so very large as reported in some similar cases. Having informed owner what had taken place, and warned him of the danger, I got the mare on to her legs, and proceeded to return the everted viscus to its normal position and state; this I accomplished by lateral compression of the body and steady pressure on the fundus of the everted bladder. Being so very recently turned inside out, I had a comparatively easy reduction. The meatus urinarius being greatly distended, I was afraid if the mare went down that the eversion would again occur; so I at once had her temporarily slung to roof of house with ropes. She became extremely excited, and threw herself sideways in the ropes with all her four feet in the air! In this position she was unapproachable; so, with the intention of making her return to a standing position, I gave her a slight tip with a rope's end over the shoulders, when, to my utter astonishment, the wood-work of roof gave way, and my poor patient was soon lying recumbent on her near side all covered over with the *débris* from the collapsed roof.

As she made no attempt to rise, I got two assistants to hold down her head, and immediately explored her vaginum and found matters *in utero* quite altered; head within reach, and, after considerable careful manipulation and traction, was got into pelvic cavity; and, as the cords had never been removed from the legs, we had merely to pull these extremities into their normal position alongside head, and within fifteen minutes after the fall of the mare we drew away a living foal! The placenta followed almost immediately, and the bladder seemed likely to follow the latter, as it had again become everted, and had assumed a more irritable appearance. I adopted the same system for reduction—namely,

compression on side and pressure on fundus of the everted viscus —with like success. To prevent further trouble with after pains, I injected six grains of morphia hypodermically, and all did well.

In the above case it must be allowed that everything was in favour of the operator, the eversion being discovered and reduced within a few minutes of its having occurred, so that the viscus in itself never deviated much from its normal state. In Mr. Beattie's case things were quite the reverse, being in general against the operator—a fact which may have been against his giving us a free, full, and comprehensible history of his case of "inverted bladder."

Turning to Mr. Beattie's other case of prolapsus of the rectum during castration, I may be allowed to remark once more that this accident is far from uncommon, and generally easily reduced; but as regards the accompanying rupture, which Mr. Beattie says he only discovered on the fourth day after the operation, I am somewhat sceptical. There are only two ways in which this rupture or rent could have occurred—namely, either during Mr. Beattie's futile endeavours to return the rectum, or, not having accomplished this, during the process of allowing the horse to get once more on to his legs—a very risky proceeding with over a foot of the rectum dangling about outside. In either case, however, Mr. Beattie ought to have observed this transverse rent of "quite sufficient size to allow the hand to pass through," as with such a rent very considerable hæmorrhage must have taken place *at once*. This rectal rent seems to me to be enveloped in some mystery, and Mr. Beattie gives us no details to help us to elucidate the mystery. All he says is: "Slight colicky pains, no fæces for four days, rupture of rectum, and death from peritonitis."

Queries: What caused the gastralgia? wherefore the obstruction? how was blood in and rupture of the rectum only discovered after four days? and where principally was the peritonitis observed? The elucidation of these points is absolutely necessary to enable us to reap any benefit from Mr. Beattie's "rare case."

I will conclude this communication with a few notes on three cases of *prolapsus recti* during castration, which have occurred in my own practice. The first case happened as far back as the 28th January, 1869, on which day I castrated a fourteen-years-old cart horse. After he was thrown and properly secured he commenced to strain most violently; and just as I was about to slit out the first testicle out came fully fifteen inches of the rectum! After a minute's consideration, I resolved to leave the prolapsed rectum alone till I had completed the castration; so I merely rolled the "prolapsus" well and carefully up with a clean cloth, and quite deliberately finished my operation. Having done so, I then

successfully reduced the prolapsus and allowed the horse to get on to his legs; he was gently exercised for some twenty minutes, and then put into the stable. About an hour afterwards he was attacked with colicky pains, rising and lying frequently, and kicking about. I gave him a laxative in combination with a strong opiate; this settled him a little, but I had to remain with him for several hours, after which he got quite over it, and, notwithstanding the severe season (January), made a splendid recovery from castration.

My other two cases both occurred in yearling colts; and in each of these colts there unfortunately happened, in addition to the protrusion of the rectum, an escape of several feet of intestines per the inguinal canal. In the first case the intestines and the rectum both escaped while the colt was under operation; and in the second colt the rectum only appeared during the operation, the bowels coming down about a quarter-of-an-hour after the operation was over and the animal once more on his legs. In both colts I reduced the *prolapsus recti* at once; I also replaced the fallen intestines by, first of all, putting all back within the scrotum and stitching up wound there; and then, introducing my hand and arm per rectum, I hauled, with extreme difficulty and great caution, the dropped bowels back through the canal into the abdominal cavity. The rectum did not appear again in either case, but within an hour the intestines had again descended and thoroughly filled the scrotum, which soon became very tense and painful. In the first of these two cases I reduced the scrotal hernia a second time, and tightened up the scrotum with a wooden clam; this was of no use, however, as the poor animal died about twenty-four hours after the operation.

In the second colt, where the bowels did not descend till after the operation, and after he had got on to his legs again, the inguinal canal seemed to have given way altogether, as when I introduced my hand and arm per rectum, my hand actually slipped through the abnormal opening down into the scrotum, till I could easily feel it with my other hand externally at scrotum! This colt succumbed during the night.

The two latter cases were very aggravating indeed, more especially as the first colt was really a magnificent animal, and full of life and vigour.

OPHTHALMIA.

BY THOMAS WALLEY, M.R.C.V.S., PROFESSOR OF VETERINARY MEDICINE AND SURGERY, EDINBURGH.*

Mr. President and Gentlemen,

In offering a few remarks on this subject to you to-day, I would like it to be understood, 1stly, that the subject was the choice of Mr. Kidd, and, 2ndly, that it must not be accepted, in any way, as an exhaustive paper; it has been written rather with the view of bringing the matter before you in a comprehensive form, and for the purpose of initiating an interchange of views in reference to several points of vast importance not only to the veterinary surgeon, but to the horse-breeder also.

Probably there is no branch of veterinary surgery to which less attention has been directed than this, and I am constrained to say that there is probably no subject in which veterinary surgeons display a greater amount of ignorance or more obsolete notions, to which they cling most obstinately.

Even the terms used by some to distinguish its various forms are ancient terms, and ought to be things of the past. I refer in this connection to the ordinary division of Ophthalmia into *superficial* and *deep-seated*, or into *superficial* and *specific* or *periodic*. The use of such terms is justifiable in speaking to ordinary persons; they can scarcely be called scientific, nor, in the case of one of them, viz., "specific," correct.

The word specific has at the present day, amongst scientific men at least, a very limited and very definite application, and there is no one feature of the so-called specific Ophthalmia that warrants the application of the term to it.

The divisions usually adopted by oculists are:—

a. External Ophthalmia.
b. Internal Ophthalmia.

The latter being divided into

(1) Anterior internal Ophthalmia.
(2) Posterior internal Ophthalmia.

In the first division we have

Conjunctivitis,
Corneitis vel Keratitis,
Sclerotitis.

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* Read before the Royal Counties Veterinary Medical Society.

In the second division we have

(1)	Anterior	Aquo-Capsulitis, Iritis, Kyklitis inflammation of the Ciliary circle
(2)	Posterior	Choroiditis, Retinitis, Hyaloiditis.

The latter is frequently spoken of as *Acute Glaucoma*. While *Lentitis* may be an accompaniment of either anterior or posterior, *optic neuritis*, unless of simple origin, complicates posterior Ophthalmia. In addition to these divisions we have also *Panophthalmitis, i.e.*, inflammation of the whole of the eyeball.

It is most largely produced by injuries, usually of a phlegmonous type, and terminates in destruction of the affected organ.

In some respects, a strict adhesion to these divisions is not of so much importance in veterinary as it is in human practice, neither, indeed, can such fine distinctions be drawn in the former as in the latter. Moreover, it is on the whole a rare thing for inflammation to confine its attacks to any one of the structures mentioned in the different divisions ; as, assuming the existence of an independent inflammation in any one of them, it would, and in most instances does, readily extend either by continuity or contiguity to another.

Undoubtedly we may have a conjunctivitis or a corneitis pure and simple, but extension from one to the other is easy and is frequent ; so with iritis, while it may remain as an independent lesion, it may easily become associated with aquo capsulitis anteriorly, or with choroiditis posteriorly.

In either forms an inflammation may be *acute* or *chronic*, *mild* or *destructive*.

Ophthalmia may be *single* or *double*.

Before proceeding further with my subject, it may be as well to glance at the *predisposing causes* of Ophthalmia. In the front rank of these I shall place *hereditary disposition*, which undoubtedly exercises as material an influence in the production of inflammation in animals as it does in man.

There are, I imagine, few V.S.'s who will question that hereditary influences exercise a large share in the production of this disease, but it is as well that we should understand at the outset the nature of these hereditary influences. I presume there is no one amongst you who will for a moment assert that such influence is due to the handing down from parent to offspring of actual disease, or even of any specific causal entity. True, we may have congenital Ophthalmia, but this may arise quite independently of any maternal influence. The tendency that is handed down is a

potential tendency, if I may use the term, and it is wholly dependent upon some inherent internal defect of the involved organ or organs, this defect rendering it or them more prone to be affected by adverse influences, if such are brought to bear, and it must be borne in mind that such liability may be acquired as well as inherited, and it is so acquired whenever the eye suffers from any form of organic or even (although to a less extent) of functional derangement. Even general debility may exercise an important influence in this respect.

I have said we have no specific predisposition to Ophthalmia. This statement will doubtless be questioned by those who consider that equine Ophthalmia is of a rheumatic origin. That such a form of Ophthalmia is common enough in the human subject is a recognised fact, and it is known as arthritic Ophthalmia. That such a form exists in the horse is staunchly asserted by some, and I well remember that some 25 to 30 years ago it was the fashion to speak of the affection as of a rheumatic nature, and to treat it as such, but I imagine that there are few even of those who then entertained that belief who cling to it now. Certainly the anti-rheumatic treatment adopted by those who were of the rheumatic persuasion was of very little curative value.

The acquired tendency resulting from a previous attack is only such as is observed in all other organs under similar circumstances, and there is no more a *recurrent* Ophthalmia than there is a recurrent laminitis or a recurrent mammitis; nor is there any more a *periodic* Ophthalmia than there is a periodic hepatitis; the recurrency and the periodicity being in all cases dependent upon accidental circumstances arising out of the surroundings of the animal itself and acting upon a structurally deranged organ.

The important fact for us to realise is that no matter whether there exists, or does not exist, a special tendency in some animals to eye disease such tendency is materially less to-day than it was twenty years ago; at least we are warranted in arriving at this conclusion, seeing that at that period Ophthalmia was one of the commonest diseases we had to treat, while to-day we meet with comparatively few such cases, and the question naturally arises—How is this? It may be answered in a few words. *Firstly*, it is due to the teaching of the members of our profession that as in man so in animals "like breeds like," and to the warnings and admonitions against the use of diseased animals for propagative purposes, expressed in speech and by pen by veterinary surgeons all over the kingdom.

Secondly, it is due to the greater care that is now taken of domestic animals from a sanitary point of view—a fact due also, I think, to the teaching of the members of the body corporate.

Climatic Influences probably have some share in predisposing to this as to allied affections, as we find that in certain countries Ophthalmia exists to a much greater extent than in others—both in man and animals—but it must be remembered that in some cases climatic influences occupy only a secondary place in the production of Ophthalmia, and that the surrounding conditions have more to do with its production than has any peculiarity of climate as such, and this perhaps refers more particularly to *change of climate.*

In days gone by, it was no uncommon thing to find on examination that numbers of Irish horses became the subjects of Ophthalmia within a few days, or weeks, after their arrival on this side of the Channel, and it was assumed by many veterinary surgeons that they were the subjects of periodic or specific Ophthalmia, as it was called, but no account was taken of the deleterious influence exerted by the treatment to which the animals were subjected *en voyage* or after their debarkation at our ports. In like manner—as I am informed by Mr. Rutherford—Australian horses exported thence to India were found after landing in the latter country to be the subjects of Ophthalmia; a disease which was seldom seen amongst them in Australia.

The influence of such treatment as that to which horses used to be subjected in transit in the production of Ophthalmia will be reverted to hereafter.

Anatomical Conformation.—In speaking of this I do not refer to any textural conditions, except conical cornea, but rather to the general anatomical formation of the eye and its surroundings. Pug dogs are, in my experience, pre-eminently disposed to eye disease, and the only explanation I can offer of this is the great prominence of the eyeball, due probably to arrested development of the orbital process of the frontal bone. In the case of the horse, there are few horsemen, I take it, who care to purchase a horse with what is known as pig's eyes or three-cornered eyes, and yet such a peculiarity is rather one of deficient development of the surroundings than of the eye itself, and no one can say that the pig is predisposed to Ophthalmia.

Another predisposing cause recognised by horsemen is *excess of power or energy* as applied to the horse; thus, a few years ago one used to hear very commonly the remark "that such and such a horse had worked himself blind," and in this there was perhaps more of the essence of truth than often resides in such axioms, for I conceive that it is not very difficult to understand that the "willing horse" is more likely to derange the circulation of such a delicate organ as the eye, by making violent straining efforts, than is an animal of whom it may be said "that he will never kill himself with overwork."

Teething may, in young animals, exercise a predisposing influence, especially in those cases in which irruption is from any cause retarded.

Actual Causes may be arranged under the head of Idiopathic, Traumatic, Sympathetic, Parasitic, Metastatic and Specific, though some of them are predisposing causes also.

(1) *Idiopathic Causes* are more numerous than are any others; but even some of these may very well be included under the head of sympathetic. They are—irregularity of feeding, indigestion, plethora, debility, exposure to cold, or cold and wet, bad hygienic conditions, imperfect lighting, exposure to a super-heated atmosphere or to irritating gases or to an atmosphere surcharged with irritant matters.

Irregularity of feeding probably exerts a deleterious action more by bringing about indigestion, and, as a result, mal-assimilation and mal-nutrition, than by any direct influence on the eye itself; and it can easily be conceived that if there is any inherent structural weakness the eye is as likely to suffer from such influence as is any other organ; or, on the other hand, if such influences are brought to bear on the system, the super-addition of such other injurious influence, as exposure to cold, may be "the last straw that breaks the camel's back," for it is a matter of experience and within my knowledge that sheep in a state of semi-starvation exposed to cold, especially draughts—as from exposure in an open railway truck or on the deck of a ship—are very apt to suffer, and in large numbers, too, from Ophthalmia.

Plethora undoubtedly exercises a material influence both in predisposing to, and in the production of, acute Ophthalmia, as of other forms of inflammation, and here again the influence is more pronounced in the sheep than in other animals.

Debility exerts its influence here in the same manner as it does in the case of all other forms of disease; it is only one link in the chain of events tending to produce or to excite the development of the affection, for imperfectly nourished textures, whether of the eye or any other organ, are especially liable to suffer from sudden nervous and muscular derangement.

Exposure to cold, or to cold and wet, like debility, predisposes to the affection in the first place by lowering the *vis vita*, and in the second place excites congestion and inflammation by bringing about sudden changes in the circulation of such delicate structures as those composing the eyeball. All people who suffer, or who have suffered, from ophthalmic affections (myself among the number) know perfectly well that exposure to a draught—even though it may at the time be scarcely taken cognizance of—is sufficient to excite the recurrence thereof.

Bad hygienic conditions, like the foregoing, exercise a dual influence, predisposing to disease by lowering vital energy, and exciting its development—by favouring the retention of irritant gases or of irritant moisture in a stable or building.

Imperfect lighting. It is a generally accepted axiom (though here, as in other cases, there are exceptions to the rule) that the prolonged deprivation of light not only predisposes to eye affections, but excites their development when the tendency to such exists; hence it is said that pit-horses are proverbially liable to become blind, and although it is not always true, it is so in my experience—at least, to a tolerably large extent.

We can, of course, easily understand that deprivation of light must interfere largely with nutritive activity by diminishing or suppressing functional activity; but allowing this, we can with equal facility understand that excess of stimulation is as potent a factor as is deficient stimulation in the production of ophthalmic derangement.

Prolonged exposure to the refraction of the rays of light from a snow-clad hill-side in winter has long been recognised as the cause of a form of blindness (usually temporary) known as "snow-blindness." Doubtless the excessive constringing effects of cold on the capillary circulation, or the uneven distribution of blood it induces, exercises quite as great an influence in this direction as does refraction. In like manner prolonged exposure to the effects of the reflected rays of a burning sun from a bare hill-side, or chalk cliff, or lime-stone road, produces material derangement in the optic circulation; but here we have the effects of excessive heat refraction in addition.

Several years ago a series of cases of Ophthalmia came under my notice, in the practice of Mr. E. Stanley, late of Warwick, in which no cause could be assigned except over stimulation.

Enzootic Internal Ophthalmia Horse.—In April, 1881, I visited (with Mr. E. Stanley) a farm, a few miles distant from Warwick, and saw five cart-horses, which were all blind from *Lenticular Cataract* in one or both eyes—ages varied from seven to fourteen or sixteen—and had all become blind during last two years. Stable square, very high (no loft), very dry, sweet and clean, and walls whitewashed; lighted by two opposite square windows, one situated N.E., other S.W., the light through which threw a peculiar glint over the interior. Door N.E. or nearly E.

Running at right angles to this stable was a long, low stable, containing several hacks, none of which had suffered; the aspect of this stable was nearly south, and the hacks, on the whole, had been fed a little more carefully than the cart-horses.

Cause.—No cause could be assigned for this outbreak. Could not be from family peculiarity, as animals had been purchased from different people, and had shown no signs of disease in early life. Both Mr. S. and myself thought it due to the aspect of the house and the peculiar light. It may have been due to improper feeding, producing indigestion, or to fright, causing acute Glaucoma.

The effects of irritant gases, or of inorganic irritants, or of physiological irritants, in the production of various forms of Ophthalmia are, I think, universally recognised.

Amongst irritating gases we have ammonia, sulphide of ammonium, sulphuretted hydrogen, chlorine and sulphurous acid, and with these we may class super-heated steam and dry, hot air, sometimes charged with fine particles of hot carbon, as in the exposure of animals to the effects of fires; the fumes of iodine or bromine or of mineral or vegetable acids, and of such volatile agents as the essential oils, and especially that of mustard.

The three first-mentioned gases are found to a greater or less extent in ill-ventilated holds of ships and in overcrowded dog-kennels and stables; and there is perhaps no form of Ophthalmia more serious than that from which sheep suffer after prolonged exposure to the mephitic gases in the holds, or between the decks of ships, though I have often thought and am convinced that there is present here another and more important disturbing influence in the shape of micrococci or bacteria.

Of the inorganic irritants we have fine particles of lime and of other caustics (though these exert also a chemical action), gas lime, fine sand, mortar, or dust, particles of chaff, the beard of barley or of wheat, and the pubes of the pods of such leguminous plants as the Dolichens pruriens. Amongst physiological irritants we may note the stings of venomous insects, such as wasps and gnats, and of certain species of flies; and last, but not least, the irritant action of micro-organisms, and it may be also the spores of fungi or pollen grain. All who have had much experience amongst sheep are perfectly well aware of the fact that in the spring and summer these animals are frequently attacked in large numbers with Ophthalmia, without those in charge of them being able to assign any cause for the attack; and not unfrequently has it been observed that the attack followed on the sheep gaining access (by trespass or otherwise) to woods and plantings near. It often happens that in such situations there is an abundance of wild flowering plants, and I think it can easily be understood that, by the sheep rushing amongst these, large quantities of pollen grain would be liberated, and this lodging on the conjunctival surface of the eye, would act as a powerful irritant in the same way as it

causes schneiderial irritation. Whether this is so or not may be a matter for question, but circumstances frequently point to such a conclusion ; and I have, several times in my life, suffered from the irritant effects of pollen grain in my own eyes. Woods and plantations swarm, too, with insect life.

In this connection it is interesting to note that some time ago Mr. Henry Power expressed the opinion that Ophthalmia externa is sometimes due to the irritation of the Aspergillus glaucus.

In speaking of the action of physiological agents we must not forget that arsenic, potassic iodide, and even potassic bromide will, when administered in excess, induce catarrhal Ophthalmia.

Emotional or Psychological Causes.—It is an acknowledged fact that, in the human subject, acute Glaucoma is often due to great mental excitement, to anxiety, and to fear. I am satisfied that such causes come also into operation in the dog, if not in other animals. I had a case last summer in a cow, while suffering from the effects of inoculation for Pleuro-pneumonia. She was a very excitable animal.

Traumatic Causes.—Injuries may be inflicted on the eye, either externally or internally; the former varying from simple abrasions of the conjunctival layer of the cornea to loss of structure and actual penetration. They are inflicted by the stroke of a whip or stick, by thorns or bushes in animals jumping or rushing through hedges, by the claws of cats, the teeth of dogs, the spurs of cocks, and the horns of cattle ; by nails, hooks, etc. ; by pieces of glass, steel, or other sharp objects lodging on the cornea ; by stroke from horse's tail or by animals rubbing the eye against walls.

Wounds of the eyeball itself are inflicted by the penetration of sharp foreign objects, by gunshots and splinters of shells or other projectiles.

Sympathetic Ophthalmia is seen in one eye as the result of loss of function of the opposite eye, or as the result of inflammation or actual destruction of the eyeball, and it is particularly liable to occur when there is a continued source of irritation in existence. This form of Ophthalmia is very insidious in its attack, and may not make its appearance until the lapse of months or years after the injury. It is possible that it may in some cases originate in some centric disturbance in the optic tract itself.

Parasitic Ophthalmia may be external or internal. The former is due to the irritation of the Filaria lachrymarum ; it is of rare occurrence in this country, but I exhibit specimen forwarded to me some years ago by Mr. Summers, of Sidmouth. Internal parasitism results from the irritation of Filaria oculi (specimen of which I also exhibit), and occasionally in the human subject from hydatid cysts.

Metastatic Ophthalmia is probably never seen except in cases of pyæmia, where it may be due to the carrying of emboli (infective or otherwise) from some pyæmic centre and their lodgment in some of the capillaries.

Specific Ophthalmia.—Specific forms of Ophthalmia are seen in the horse during the course of Effusive Fever; in cattle in Cattle-plague, and very exceptionally in Tuberculosis; in sheep in Sheep-pox; in pigs in Swine Fever; in dogs in Gonorrhœa and Distemper; and in poultry in Tuberculosis. The only other forms of specific Ophthalmia, properly so-called, which I have met with are those cases of purulent inflammation sometimes met with in dogs, and which are apparently contagious; and erysipelatous inflammation (also in dogs) as an extension from the face and eyelids.

Types of Inflammation of Conjunctiva and Cornea.—The most common type is undoubtedly the catarrhal; we occasionally, however, meet with marked cases of croupous inflammation—such, in fact, is seen as the result of irritation of powerful gases and powerful irritants and in Rinderpest.

Purulent (or Egyptian) *Ophthalmia* is sometimes seen as the result of neglected catarrhal; though it may occur quite independently of this form, it is probably due to some form of coccus.

Diphtheritic Ophthalmia is, in my experience, very rare; it is nearly always due to inoculation, but while allowing this, it must be borne in mind that any distinction existing between these various forms of Ophthalmia is mainly one of degree.

The Rarer Forms of Ophthalmia met with in practice are—

(*a*) Granular—most frequently seen in India.
(*b*) Pustular or Phlychenular.
(*c*) That form of Chronic Ophthalmia designated Cuticular.

Symptoms and Course of External Ophthalmia.—In speaking of these it must be borne in mind that for all practical purposes the symptoms in our patients are objective.

Constitutionally there may be more or less fever and general depression; this, however, is always greatest in internal Ophthalmia or in those due to specific causes.

The local symptoms are more or less swelling of the eyelids; more or less ptosis and photophobia; distension of the superficial veins; throbbing of the adjacent arteries; heat and tenderness on pressure; at the outset profuse lachrymation, due to irritation of the lachrymal glands, which gives place in due course to muco-purulent matter or croupous products. On carefully everting the lids, the conjunctiva will be seen to be injected and swollen (dropsical); there may be ecchymosis and even hæmorrhage; and in the most acute forms the conjunctiva fre-

quently presents a jelly-like appearance. The corneal conjunctiva is in some instances also infiltrated with serum or even lymph, producing *chemosis*, which may extend over the whole surface of the globe; this is best seen in Effusive Fever of the horse. As time goes on the cornea becomes involved; it becomes opaque from effusion of lymph into its structure, which may be of a pure white or of a yellowish colour. The corneal vessels become dilated, and new vessels, having a looped distribution, are quickly formed.

If the sclerotic becomes involved, it assumes a salmon-pink appearance; and here also the pre-existing vessels become dilated, and there is a rapid formation of new vessels. The sclerotic vessels are easily distinguished from the corneal by their linear arrangement. The suffering is intensified under these latter circumstances.

In *Croupous Inflammation* the croupous matter may be exuded in enormous quantities over the whole surface of the conjunctiva; it may collect in jelly-like masses in the inner canthus and palpebral fissures, or it may form a pseudo-membrane over the surface of the cornea.

In *Diphtheritic Inflammation* not only is there a collection of detritus of an ashy-grey colour, but there is also loss of structure of the conjunctiva itself, which readily bleeds on removal of the false membrane.

In *Purulent Ophthalmia*, the discharges are from the outset of a purulent and destructive character, setting up irritation of the edges of the eyelids and of the *meibomian follicles*, consequently the secretion of the latter becomes agglutinous and produces adhesion of the eyelids. It is in this form more than in any other that we have to dread destruction of the cornea, either by progressive ulcerative keratitis or by rapid softening and breaking up of its constituent elements—diffuse *suppurative corneitis*. Collections of pus, too, often take place in the deep layers of the cornea, producing corneal abscess, or, if situated at the lower part, *onyx*. It is in this form, too, that we have to dread penetration of the cornea and evacuation of the humours and also partial or total *staphyloma*.

In the *Granular Form* we have, in addition to the ordinary symptoms of inflammation, the formation of minute granular bodies on the surface of the conjunctiva; these are enlarged papillæ or lymphatic follicles, and they materially aggravate the symptoms.

In the *Erysipelatous* form the sclerotic conjunctiva becomes elevated by effusion of a reddish-yellow coloured fluid, which causes it to extrude between the eyelids and to present a glistening appearance. After a time, however, pus forms.

In *Phlyctenular Ophthalmia*, which is rarely seen except in young dogs, the corneal-conjunctiva becomes elevated in the form of small pustules having a vascular ring around them. These pustules may become confluent and lead to superficial destruction of the cornea.

In *Cuticular Ophthalmia* the cornea becomes opaque, thickened and hardened (sclerosed) as the result of interstitial growth, and resembles a piece of white skin over which a few disegregated vessels take their course; in some instances, however, there is an enormous increase of new vessels, giving to the cornea a fleshy appearance, and constituting *pannus* or vascular cornea. This must not be confounded with the vascular zone which results from marginal corneitis.

The *Symptoms of Traumatic Ophthalmia* are, 1st, those of ordinary inflammation, but in addition we have the existence of the wound itself. This may be in the form merely of the loss of several layers of the conjunctiva without any opacity; on the contrary, it may be in the form of extensive loss of structure with great opacity and the rapid formation of circumferential vessels.

Foreign Bodies may become surrounded by, or embedded in, masses of lymph, which may for a time hide them from observation.

In *Parasitic Conjunctivitis*, the filaria are seen wriggling about in the conjunctival fluids.

Symptoms of *Internal Ophthalmia.*—Many of the symptoms first noticed may be present here, and should it be complicated with corneitis its existence may not be detected until the cornea clears up. In all cases, the eyeball, if carefully manipulated, will be found much more tense than normal, and the animal resents in a marked degree the application of pressure thereto; photophobia is also well-marked. If the membrane of the aqueous humour is the seat of inflammation, it will be observed that the posterior surface of the cornea becomes opaque from thickening of the membrane and deposition of lymph, which may be of a white or yellowish colour.

In *Iritis*, the iris is at first seen to be injected and very irritable, and myosis is more or less marked; in a very short time, however, the iris becomes opaque from the exudation of masses of lymph, and not infrequently these are found on the papillary edges producing adhesion.

In some cases these masses of lymph become torn, and present a jagged appearance. The striated appearance of the iris is lost. The lymph, as in other situations, may be colourless, yellow, or even hæmorrhagic.

If the pupil is not closed it will be observed that the capsule of the lens has become opaque. As time goes on, the lymph thrown into the anterior chamber may degenerate into pus, and produce

the condition known as *hypopion.* The thing, however, that we have most to dread, in addition to adhesion of the pupillary margin, is adhesion of the iris to the membrane of the aqueous humour, or to the anterior capsule of the lens, or to both these structures; constituting partial or complete *synechia.*

Posterior Internal Ophthalmia constitutes the *Acute Glaucoma* of the oculist. In this condition the tension of the eyeball is materially increased, and the appearances presented are characteristic. On looking carefully into the eye it will be observed that the iris is forced close against the posterior surface of the cornea, it has a dull appearance, and its vessels are materially distended. The pupillary margin may be retracted, but there is no exudation of lymph on to its surface. It is also sluggish in its movement, even under the influence of stimuli.

The interior of the eye has a dim appearance, and by using transmitted and reflected light it will be seen that with the former the lens has a peculiar amber colour, while with the latter it has a somewhat sea-green appearance; in course of time the lens may become opaque.

The white of the eye is usually congested, and even the posterior layers of the cornea may be slightly opaque from pressure of the aqueous humour. The great danger to be apprehended from this form of Ophthalmia is *permanent blindness, dissolution* of the *hyaloid membrane* and *displacement* of the *lens, liquefaction* or *permanent opacity* of the latter body—*cataract.*

Choroiditis can sometimes be distinguished by the peculiar arrangement of the greatly distended *vena vorticosa,* which can be readily seen by the aid of the *catoptric test,* and by the ophthalmoscope. In a short time, however, this excessively vascular condition may be obscured by the exudation of lymph.

Retinitis is also distinguished by the distended state of the retinal vessels and pulsation of the artery, when it can be seen, and not infrequently it is associated with hæmorrhages more or less diffuse.

Injection of the Retina is one of the most valuable signs we possess of the existence of cerebral or cerebro-spinal meningitis.

The presence of foreign bodies in the interior of the eye may escape detection, more particularly if the wound in the cornea and sclerotic is closed, and no history of the injury afforded; moreover, the object may be itself surrounded by lymph, or blood, or both, and thus be hidden from sight.

The *Therapeutic indications* for the *treatment* of *any form* of *Ophthalmia* are—

Firstly—To reduce inflammatory action.

Secondly—To give the parts physiological rest.

Thirdly—To relieve tension.

Fourthly—To favour absorption of inflammatory products.

Fifthly—To prevent consolidation of such products and the formation of new tissue.

Several of these indications are brought about by the same means.

In all cases the animal should be placed under favourable hygienic conditions, kept as quiet as possible, and light excluded. Diet should be low and of a laxative character. Laxative medicines are always useful, but I have little faith in the administration of strong purgatives, aloin and calomel being, both in the dog and horse, most useful and less irritant than aloes itself.

Anti-pyretics may be administered if the symptoms seem to demand them, aconite and neutral salines being most useful.

In debilitated animals tonics may be required. In specific cases treatment generally applicable to such should be resorted to.

Locally, the eye may be bathed and thoroughly fomented with the infusion of arnica, camomile, or poppy heads.

Local blood-letting, by opening the anglionial vein, or by free scarification of the conjunctiva, is of the greatest use ; the latter is especially indicated when the conjunctiva is much swollen and injected, as also when chemosis is marked, and may be practised either by the lancet or by probe-pointed scissors, previously anæsthetising the parts with cocaine.

The local applications in external Ophthalmia which I have found of most use are solutions of acetate, of lead, or zinc, combined with infusion of arnica or aqua opii. The objection to the use of lead entertained by some practitioners, on account of its forming the insoluble chloride with the tears, is a theoretical one, and even if a little harm does result, it is more than counterbalanced by the good gained ; such at least has been the experience in my own case.

In more severe cases, especially those marked by great sluggishness of the circulation, alum, with or without acetate of lead, or alternatively sulphate of zinc, is most useful ; cocaine or belladonna, or, in preference, atropine, are useful as sedatives.

In purulent Ophthalmia, such germicides as bi-chloride of mercury, chloride of zinc, carbolic acid, or iodine may be required ; iodoform and tannic acid have both been lauded in these cases ; my experience of these agents has not impressed me with their utility.

In granular Ophthalmia I have found dry alum, or dry sulphate of zinc rubbed freely over the granulations, of the greatest value.

In the most obstinate cases it may be advisable to scarify the conjunctiva freely and apply tincture iodine ; and probably you are

well aware that the conjunctiva is beaten with nettle by the natives of India in this disease. The action exerted may be two-fold—viz., mechanical and physiological. Again, obstinate cases have been cured by the use of jequirity, and some time ago Mr. Fred Smith applied, with success, a physiological irritant, in the shape of discharge from the eye of a horse suffering from Influenza.

The insertion of setons and the application of blisters to the skin of the cheek, are sometimes of the greatest possible use in sub-acute or chronic cases.

If opacity of the cornea persists after the subsidence of the active symptoms, a solution of potassic iodide may be applied to the surface of cornea, and potass iodide and calomel administered internally. The projection of powdered carbonate of ammonia, of calomel, or of powdered sugar is largely practised and is undoubtedly useful. It must be understood that if the cornea has become pigmented, as so often happens in pug dogs, or if interstitial changes are marked, treatment may be of little avail, though even here it should be persevered with for a time.

If ulceration of the cornea commences, it should be at once checked by the use of nitrate of silver. In human practice the galvano-cautery has been substituted for lunar caustic, with the best results in each case; the object aimed at is the destruction of the micro-organisms which are always present in the spreading zone.

When the cornea becomes very vascular, free scarification, with the application of belladonna, is indicated.

In anterior internal Ophthalmia, the great object to be obtained is the prevention of the adhesion of the iris and the relief of its over-charged vessels. For this purpose atropine is indicated, or a combination of cocaine and atropine.

After the subsidence of acute inflammation, iodide of potass and calomel should be freely administered.

In acute Glaucoma *atropine is hurtful.* More good will be derived from a weak solution of eserin in combination with cocaine. Surgical treatment, however, is of much greater value, and I am satisfied that many eyes might be saved if paracentesis, either through the cornea or sclerotic, was had recourse to more frequently. Iridectomy should also be practised; I have seen good results follow the operation in the dog; here, too, iodide potass. and calomel should be administered immediately the active symptoms have subsided.

In Retinitis I have found cocaine more valuable than any other remedy.

In the case of the lodgment of foreign bodies, an attempt should

be made to remove them. Fortunately, there is now little difficulty in doing this by the aid of cocaine, but I would just remark that the putting of the head in different positions favours the operation, especially in cattle, by altering the position of the eyeball.

If the injury is due to fine particles of glass and similar objects, the instillation of oil of sweet almonds, medicated with prussic acid or carbolic acid, will be found of greater value than the methods usually adopted.

If foreign bodies can be detected in interior of eye, they should be removed without loss of time.

In those enzootic outbreaks occasionally occurring in plethoric sheep, the animals may be bled and physicked and the diet carefully regulated. Animals depastured on snow-clad mountains should be removed to the low-lands.

FIBROMA OF THE UTERUS IN A MARE.

BY H. THOMSON, M.R.C.V.S., A.V.D., CAVALRY DEPÔT, CANTERBURY.

FIBROID tumours of the uterus in mares are rare; but although recorded cases are not numerous, we are not without information as to their having been occasionally noted in connection with pregnancy. A case, however, has lately been observed by me which, as far as I can ascertain, has no connection with pregnancy whatever. The details are these:—

Cavalry depôt, mare No. 73, five years old, was admitted to the infirmary on the evening of the 20th July last, showing symptoms of abdominal uneasiness, and treated accordingly. On rectal examination, a swelling, in shape and size like a distended bladder, could be detected; and as the mare had not urinated since her admission, the catheter was passed, but only a small quantity of urine escaped by it. In a short time decided labour-pains set in, and continued at intervals for about two hours, a strongly smelling fluid, in colour and odour similar to mixed, amniotic, and allantoid fluids, being voided at each expulsive effort, until a tumour, in size and shape somewhat like an elongated equine heart, came away, and the mare at once appeared to be at ease. She was made comfortable for the night, a further examination being deferred until the following morning.

On examining the mare by daylight, she was found to be lively and bright, feeding well, and apparently none the worse for her previous discomfort. A few clots of blood were found in the vagina, and the os uteri was open. A quantity of carbolised water was injected into the vagina, thoroughly washing it out; but this treatment was found to be unnecessary after a few days, the mare

continuing to progress satisfactorily until she was discharged to duty on August 20th.

The tumour was externally white, firm, and smooth, with a small lacerated pedicle at its base. On cutting into it, it was found to contain several cysts, each rather larger than a large walnut, and filled with fluid similar to that evacuated during labour. It was at once cleansed, and having been placed in a solution of Hydrarg. perchlor., 1-1,000, was forwarded to Professor Smith, at the Army Veterinary School, Aldershot, by whom it was examined, and to whom I am indebted for a description of it.

ARTERY TORSION FORCEPS.

BY S. E. NASH, M.R.C.V.S., RICHMOND, YORKSHIRE.

THE above woodcut represents a little instrument which I have designed, and which Messrs. Arnold and Sons, London, have manufactured for the use of the operative surgeon. It does away with the troublesome taking up and ligaturing of arteries when performing an operation. It is very simple in construction, and easy to work with. When an artery is severed, you get hold of it with the inner forceps, which have a spring catch; when secured, lower the outer forceps and grasp the artery below the spring forceps, and hold them tight together with the thumb and finger, and twist the ebony ball round until the artery is severed. The instrument can then be removed, and you can proceed with the operation, dealing with all vessels exposed in the same way. It might be used with advantage in the operation of docking, by securing and twisting the coccygeal arteries, thereby doing away with the hot-iron.

ACUTE NECROTIC PERICHONDRITIS OF THE LARYNX IN A PIG.

BY PROCTER S. HUTCHINSON, M.R.C.S., ASSISTANT-SURGEON, THROAT HOSPITAL, GOLDEN SQUARE, LONDON.

As cases of idiopathic perichondritis of the larynx in the human subject are rare, and when they do occur the suspicion of syphilis as a cause is often difficult to eliminate, the following case happening in one of the lower animals is important. It occurred some

years ago in a fat and otherwise healthy boar pig, and was obtained by my father, by whom the animal had been seen.

The animal suffered from symptoms exactly resembling croup, the breathing being stridulous and very difficult. The onset had been rapid ; at any rate the pig had been urgently ill for only a few days. No special cause could be assigned for the attack. As there seemed no likelihood of recovery and the dyspnœa was great, the animal was killed. On *post-mortem* examination the effects of the inflammations were found to be most marked around the cricoid cartilage, a portion of which was removed and its place occupied by inflammatory products ; indeed, a considerable portion of the cartilage had exfoliated, leaving only a small portion at the lower and inner part. It is to be noted that no considerable suppuration had attended the process. The necrosed fragment was embedded in a soft granulation structure, with only a very small quantity of puriform fluid. There was general œdema of the larynx, which explained the dyspnœa. The other cartilages were healthy, and no breach of surface had taken place anywhere.

I have been unable to find in any of the books on veterinary subjects, any mention of perichondritis of the larynx in animals. I find in Mackenzie's work, "On the Larynx and Trachea," p. 282, that he records three cases of primary inflammation of the cartilages, all in patients over sixty years of age—two men and one woman. It was the cricoid which suffered in each case of primary disease. He says : "The idea of Dittrich that the disease arises from ossification of the cricoid cartilage, leading to pressure on the soft parts against the vertebral column and subsequent necrosis, is probably erroneous." There was no ossification in this case ; and the animal, although adult, was not senile. The specimen has been forwarded to the College of Surgeons' Museum, in which as yet there is no similar one.

It remains exceedingly difficult to suggest any plausible cause for such an attack of laryngitis as that described, but I may repeat that the case is very valuable as conclusive proof that such may take place quite independently of any specific influence. That the inflammation was catarrhal is perhaps most probable.

SUCCESSFUL TREATMENT OF A FRACTURED JAW IN THE HORSE.

BY S. BAILEY, V.S., OLDHAM.

On the 22nd day of June, my immediate attendance was requested to a valuable five-year-old brown cart horse belonging to John Thomas Mansley, Waterhead Mill, Oldham. The messenger

informed me that the horse yoked to a lurry had taken fright and run away down a very steep hill, and come into violent collision with a churchyard wall, and received very serious injury. On arriving at the stables, I found the horse suffering from several wounds and bruises on various parts of the body and legs, more especially about the head and facial bones, with considerable hæmorrhage from both the mouth and nostrils. For the purpose of arresting the bleeding, I ordered a copious application of cold water. After it had somewhat abated, I made an examination of the mouth, and discovered a longitudinal fracture of the superior jaw in a straight line with the division of the central incisors, both of which were knocked on a twist inwards, leaving a very prominent split of the jaw, with a corresponding rupture of the palate across the bars and gum. It is customary with me to go prepared to treat ordinary cases, but certainly not fractures, neither is it advisable in but very few cases for veterinary surgeons to make the attempt, for fractures in the horse are more formidable than in the human subject, for many reasons. In the first place, we cannot use the same appliances, the same spelks and bandages, nor keep the animal in the same state of quietude. It is impossible to enjoin it to keep itself in this, that, or the other position, which greatly militates against success, not but that we have an equal disposition in the bones of one as the other to take on the restorative process. Then again, if we make the attempt and fail, it will have a tendency to reflect somewhat on our professional reputation, especially amongst a class of people who know no better, but who, as a rule, are generally found the most flippant with their lingual muscles, which may be compared to a race of horses, which go the faster the less weight they carry; such babblers often take possession of a subject, as a highwayman does of a purse, without knowing its contents, or caring to whom it belongs. There is another very important matter which should never be lost sight of in such cases, which is the probable amount that it might cost our client before we should be able to pronounce the patient convalescent and fit for work. I remember the late Professor Spooner, when lecturing on fractures, very wisely remarking that there could be no satisfaction in treating a case of fracture if there was a possibility that the animal might eat its head off before recovery. But I am rather diverging from my case. After somewhat taxing my professional abilities as to what course to pursue, I determined to attempt to reduce the fracture, and for this purpose procured a portion of a cigar box and constructed it into a spelk about three inches long, but not quite as broad as the jaw. I then rounded one end of it so as to fit the posterior portion of the incisors; about midway on each side of it I cut out a notch that would admit a broad

tape, which I tied once round it, leaving about half a yard of tape on each side. I then placed the pieces of the fractured jaw in apposition and secured it by a temporary string round the incisors. I afterwards, with the assistance of my son, placed the spelk to the palate, getting it well up to the posterior portion of the teeth, the side on which the tape crossed undermost. We then brought the tape over the gum, getting it as high up under the lip as possible. After binding it round two or three times, I secured it by tying it at one side of the jaw. I found that my rudely constructed spelk had the result which I anticipated, for it not only had the effect of binding the jaw together, but the tighter I bound it the more effectual it was in bringing the central incisors into their proper position—in fact, it acted on the principle of a lever. I then ordered the horse to be put in pillar reins, and fomentations containing poppy heads to be applied to the swollen parts, and to be supplied with gruel and kept quiet. The following day I visited my patient again, and was pleased to find the spelk and bandage intact; but what might naturally be expected, he refused to take his gruel. I ordered the fomentations to be continued, and tried again with gruel. On the 24th I found that he was taking his gruel freely, and the spelk and bandage was satisfactory, but the nasal bones having been very much injured, an offensive discharge was coming from both nostrils, which continued for about three weeks. I syringed them daily with the following lotion: Acid Carbolic ʒj, Glycerine ℥j, Aqua ʒviij. For the purpose I used an ordinary quittor syringe, to which I can attach a flexible tube about five inches long, which answers remarkably well in such cases. I had occasion to put a gag in his mouth covered with cloth, to prevent him grinding his teeth together; this was only removed when he was supplied with gruel and eggs, and changed occasionally for hay tea and sloppy bran mashes. I removed the spelk and bandage, and replaced it after being on a week. I took from the jaw at various times three small splinters of bone. I kept the bandage on a little over three weeks, and then removed it altogether, and ordered him to have steamed chop, oats and bran, and a plentiful supply of grass. The horse is now working and doing well, and it would take a minute inspection to discover that anything was amiss with either her teeth or jaw.

AN EPIZOOTIC FEVER AMONG HORSES IN SOUTH AUSTRALIA.

BY EDWARD STANLEY, F.R.C.V.S., VETERINARY SURGEON TO THE GOVERNMENT OF NEW SOUTH WALES.

An epizootic and contagious equine Fever broke out in South Australia in 1886, and the infection was carried by teamsters and coaching-horses from that colony to the horses in the Silverton district in the end of that year and beginning of 1887. It continued with considerable virulence during the hot, dry summer, but disappeared with the autumn rains.

During my short trip to Silverton I have seen about 100 cases of the disease, and have been able to make notes from careful observation of a few. The disease having prevailed in that neighbourhood for six weeks, most of the town horses had either recovered or died, and the alarm had consequently subsided. However, fresh arrivals were innocently caught in the contagious trap; and horsekeepers, by fetching in grass-horses to fill up the blanks, kept the contagion supplied with fuel. Necessity compelled them to fulfil their contracts, and familiarity with the disease reduced its terrors, while experience had taught them to avoid some errors in treatment which on the outbreak of the malady had caused fatal results. In consequence of the brevity of my visit, compared with the progress and numerous phases of this interesting disease, my report must be accepted as merely introductory; and I anticipate much valuable information may be added to the subject by veterinary surgeons in the adjoining colonies, where I have reason to believe it is not unknown.

History.

So far as I can learn, the present outbreak was first noticed in a teamster's horses from the Barrier Ranges mining districts (it is not known which colony they came from) A dead horse was left at Mingary, South Australia, early in December, 1886, and the contagion spread through the railway contractors' teams, which were idle at that time, proving fatal to 40 horses out of 150. These were valuable draught animals, in good condition; those young and fat suffered most.

The construction of the Petersburgh to Silverton Railway, also the mining industries, caused the extensive employment of horse labour; and the disease being attributed to a local cause, the *bête noir* being *Euphorbia Drummondii* (which my experiments hitherto have proved to be an innocent weed), misled horse-owners as to its true contagious character; therefore farmers and teamsters easily contracted the disease, and becoming alarmed, rushed away from

the plague spot, taking the disease with them. So the country has become gradually invaded, following the railway line south to Port Pirie, and by sea it has gone to Albany, Western Australia, and north to Cockburn, there crossing the Barrier Ranges into New South Wales. It appeared in Silverton on 12th January, 1887, and has travelled to Corowa, Malculea, the Gorge, Round Hill, Gardiner's Creek, Poolamacca, Purnamoota, Langawera, Double Wells, Mount Brown, Bencannia Lake, *en route* for Wilcannia and Menindie. Mundy Mundy, Mount Gipps, and Burta stations have taken the disease home by buggy horses visiting Silverton, and have infected the home station horses; but by careful isolation the disease was prevented spreading to paddocked horses and breeding stock.

Character.

It is an epizootic contagious equine Fever—a disease which elaborates a virulent element, through the medium of which it is propagated and extended by contagion from horse to horse, and it appears not to spread through the medium of the air or to attack any other animals.

In some respects, it resembles the horse diseases I have seen in other countries, and are described in veterinary works under the names of Epizootic Cellulitis, Rheumatic Influenza, Pinkeye, Purpura Hæmorrhagica, and Epizootic Pneumonia; but it differs from all these very materially.

The fever which follows the reception of the disease germs, although high in many cases, is very variable in intensity; the disease is by no means uniform in attack, location, or subsequent complications.

The blood withdrawn in the early stages is dark-coloured; the corpuscles rapidly coalesce and sink to the bottom of the vessel, leaving a thick, buffy upper surface. During the height of the fever the blood is darker, and coagulates so rapidly that the buffy coat does not appear. In the last stages the blood is tarry, and only forms soft clots.

The remarkably rapid loss of flesh very characteristic in this disease is, I think, explained by Dr. Lionel Beale, who says that "in cases where the body heat rises several degrees in the course of a few hours the germinal matter increases with great rapidity. The capillaries of a great part of the body are found to be gorged with particles of living matter, for the most part descended from the colourless blood corpuscles, while the masses of bioplasm of the neighbouring tissues have increased to twice their normal size." On microscopic examination of the blood, the white corpuscles were conspicuous by their absence; many of the red cells appeared granular; micrococci, diplococci, and bacilli could be detected in

the same field, but, in so far as I could judge, they were not sufficiently numerous to be distinctively pathogenic, and possibly some were accidental contaminations during the examinations. This is a field for further research and experimental demonstration.

The disease shows a disturbance of the vascular system, with alterations in the character of the blood which cause obstructions in the capillary vessels, followed by hæmorrhagic spots, accompanied by organic complications more or less severe.

Cause.

This is due to specific poison, most likely a micro-organism, eliminated from a diseased animal, entering the system of a healthy one, apparently through the digestive organs. In no case has the disease (so far as I can learn) spread atmospherically. Horses carefully kept from contaminated food and water have continued free from the disease, although only a few yards have separated them from the diseased and dying, and it has not spread to paddocked horses along the routes the disease has taken, without actual contact.

Symptoms.

On the first day of illness attracting attention the following symptoms are presented: Drowsy, sleepy appearance, loss of energy, appetite diminished; if worked, is slow to answer the whip, and soon tires; at rest the coat is erect and is harsh and dry, the skin sticks to the ribs, the flanks are hollow, the bowels constipated, the urine scanty and often high-coloured. The conjunctiva lining, the eyelids, and the mucous membrane of the lips-gums, and tongue are of a reddish colour.

Pulse, 60 beats per minute, full and distinct; respiration, 20 to 30 per minute; temperature of the body, 101° to 103°; ears and legs are uniformly warm throughout the illness.

Second day.—Increasing lassitude, muscular weakness, general debility, unsteady gait; if driven, drags the limbs wearily along, carrying the head low, with drooping ears and half-closed eyes; tears trickle down face, and tenacious foam hangs from flabby lips, giving the countenance a most dejected appearance, which is not improved by swarms of flies and dust; heart beats quicker and with force; the bodily temperature is rising; eats and drinks in a dreamy, indifferent way.

Third day.—The eyes are extremely sensitive to light, are retracted in the orbits; the eyelids are swollen, the membrana nictitans is œdematous, and very distinct dark-red blood-spots appear on the now orange-red conjunctiva; the cornea loses its transparency, and becomes dull and opaque, so that the pupil cannot be seen; tears, mingled with a muco-purulent discharge,

continually escape from the eyes and adhere to the face, attracting swarms of flies, the poor animal being too ill to disturb them.

The lips are swollen and pendulous, and masses of tenacious mucus fall into the feed as he eats in a very languid, indifferent manner.

The mouth and sides of the tongue are high-coloured, the mucous papillæ are inflamed, presenting a spotted appearance; the upper surface is covered with a thick, dirty grey fur.

The nostrils are dry and dusty, they are less inflamed than the eyes, and I have not seen any catarrhal discharge.

Fourth day.—The Fever is now at its height, and continues for three or four days with little variation; pulse ranges from 70 to 80 or higher, full and distinct; respirations from 25 to 35, movements thoracic; temperature from 105° to 106°, or even higher, varying two or three degrees in twelve hours. Although nearly blind, the patient is perfectly conscious and sensitive to touch or sound; he will not seek food or water, but takes both when offered; stands in one place, uneasily shifting the quarters by continually flexing first one hind leg and then the other without moving the feet, indicating pain in the joints; does not lie down or give any indication of abdominal pain. The fæces soften with the mash diet, and the bowels act normally; the urine is clear, deep yellow, and often gelatinous. The cornea is milky; the blood-spots in the eyes enlarge into patches of extravasated purple blood, giving a liver colour to the membrana nictitans; the mouth and lips get darker and purplish, and patches of extravasated blood are visible in the vagina.

The appetite never entirely fails, but the act of drinking, especially if the head is held low, is difficult; the lips are frequently dipped before swallowing; the act sometimes excites coughing, but this is painful, as it shakes the aching joints; it is low and suppressed, so as almost to escape notice. The rima glottids is inflamed and œdematous, but there is no external swelling apparent in the glands or throat. The loss of flesh is incredible; a stout horse is reduced almost to a skeleton.

On the seventh or eighth day the crisis is reached; the advent of œdematous swelling in all the limbs is favourable. The joints appear relieved from pain; the respirations are less frequent; the pulse becomes softer and slower; and the temperature is more settled, being two or three degrees lower. Very slowly, but surely, day by day, cheerfulness returns, the appetite improves, and the patient moves slowly about; the evacuations become natural; the eyes improve, cornea clears from the top, leaving a white, saucer-shaped patch and small ulcerated spots; in process of time these clear away. During convalescence the muscles are often function-

ally deranged. Some walk most painfully and exceedingly slow, feeling their way step by step like a man with Rheumatism ; others are weak, they roll like a drunken man ; others droop the quarters, crouching along as if suffering from Lumbago, drag the hind feet along the ground, and appear in danger of falling at every step. Others walk stiff-jointed, as if the swelling was only a mechanical hindrance to progression ; others have cramp in the muscles, causing partial luxation of the petalla ; others have Stringhalt ; others have Laminitis in all the feet. No case of Paralysis or cerebro-spinal disturbance came under my notice. Convalescence after the severe fever is never rapid ; the dropsical swellings extend under the abdomen to the sheath ; it is two or three weeks before the legs get fine, or health and spirits are restored.

The conjunctiva changes from liver colour to a dirty brown, and as the *débris* of disease gets absorbed the deeper spots of extravasated blood show up clearly on the rest of the membrane, which gradually assumes the healthy pink colour.

Course and Termination.

Some cases run a mild course throughout, and may even escape observation ; others go to work with swollen legs after two or three days' illness, and recover ; but the fatal cases occur in horses fresh in to work off grass, or hard-worked horses urged on while the disease is in progress. All rapidly lose flesh and condition. This is due in a great measure to want of nutritious feed. The mistaken practice of bleeding and making the poor brutes walk about while they have a drowsy headache, eyes too painful to open, and shooting pains in every limb—such treatment, aided by drugging, has killed many a good horse ; others turned into a paddock to "rip," where food is scanty and water scarce, being too ill to walk, and die from such inhuman neglect.

If good green food and water were abundant, I think affected horses would make good recoveries, especially if unmolested.

Pathological Anatomy.

Hæmorrhagic spots and stellate patches of inflammation are diffused over both serous and mucous surfaces, effusions of serous lymph, and adhesive inflammation of the coverings of the lungs, heart, liver, and spleen ; also serous effusions into cellular tissues of the limbs and head. In fatal cases the inflammation is so intense as to obstruct the circulation ; local mortification is speedily followed by death.

No animal under my observation died. I made *post-mortems* on four casual cases of fever, but knowing very little of their history or treatment, simply state the cause of their deaths :—

1. A coach-horse.—Putrid lungs.
2. A teamster's hack.—Pleuritic inflammation and gelatinous effusion covering the pericardial sac; also slight enlargement and inflammation of the spleen.
3. A teamster's mare, five years old.—Ill three or four weeks. The spleen was very much enlarged and honeycombed with purulent matter, and the lymphatic glands generally inflamed.
4. A hack mare, three years old; foal at foot.—Ill about three weeks, with spleen in the same condition.

The microscope revealed crowded clusters of bacteria in these spleens.

The small intestines in every case were healthy.

Contagium.—The virus probably escapes from the infected by the mucous membranes—that is, from all the orifices of the body—and appears to be principally communicated by the discharges from the head.

Mode of Access.—This is by contaminated drinking-water troughs, buckets, feed, mangers, boxes, bags, bridles, harness, horse-brushes, rubbers, etc., and also by the evacuations. These, after drying in the sun, are actually eaten by stray loafers (loose horses).

Under certain atmospheric conditions, which are at present incompletely understood, this disease may spread through the air; but usually intense heat with a dry pure atmosphere are unfavourable to such development; while a moist atmosphere with impure air, such as is found in crowded stables, would favour such a result.*

Incubation.—From the time of exposure to infection is from three days to three weeks.

Extension.—Only by contagion from horse to horse, healthy horses becoming contaminated by direct contact with the virus escaped from a diseased animal. It has distinctly followed the horse-tracks used by mails and teamsters, and has been taken to run homesteads by infected animals, and has been arrested on runs by isolation.

Mortality and Loss.—Most deaths occur during first week of attack; some chronic cases also die weeks later. About 10 to 15 per cent. was the average number of deaths during my inquiry; although at Mingary I was told 40 deaths occurred in a mob of 150. The indirect loss from illness is very great. Few horses are fit for work for two or three weeks; many require twice as long, and they lose all their flesh and strength, requiring good food and a long spell of rest; others do not make good recoveries, and

* NOTE.—This disease entirely disappeared as soon as rain set in.

suffer from chronic mischief, linger for weeks, and then die. Good feed and care are necessary to ensure complete recovery.

Immunity.—A team of nine donkeys have drunk and fed with the sick constantly, and have escaped infection. Bullocks are also exempt. About 20 per cent. of horses escape infection, or more probably have it so lightly as to escape observation. I know of no case in which a human being has contracted the disease.

Sanitary Measures.—Carcases should be burned or buried with the sacks, cloths, feed-boxes, and valueless articles used about them. Bits and harness should be put into boiling water. Stable sheds should be limewashed or tarred, and disinfected with chloride of lime, carbolic acid, or chlorine gas. Horse-droppings and manure should be burned, especially on watering reserves and camping-grounds. Local authorities should look to this.

Preventive Measures.—Sick animals should be isolated from the healthy, and every article used about them be kept separate.

The hospital attendant should not mix with the healthy animals, and strangers should be cautioned against visiting the sick. Regulations prohibiting the movements of infected animals should be enforced. As the disease is rapidly approaching to the river Darling, and its flooded condition diverts the traffic to the punt crossings, this is where I recommend the plague should be stayed. The river, forming a natural barrier, would be an invaluable adjunct to assist legislation in preventing the spread of this distinctly contagious disease throughout this colony.

Curative measures consist of absolute rest, with room to move about, pure air and water, soft food, as wet bran, scalded oats, and chaff, given in small quantities and often, and not allowed to become soiled or sour; linseed tea and gruel to drink; green fodder when it can be had.

Saline Medicines.—Give early a dose of sulphate magnesia, 4 ozs. in a pint of water, to relax the bowels; then chlorate or nitrate of potass, 2 to 4 drams, night and morning, in the drinking-water, during the fever, and until the urine is clear and free. Some cases with languid circulation may benefit by beer or porter, carbonate ammonia, aromatic spirits of ammonia, spirit æther nitrous, etc.

Restoration will be promoted by liberal feeding, and the addition of such tonics as sulphate of iron, liquor arsenicalis, vegetable aromatics, bitters, and common salt.

Editorial.

THE PROTECTION OF THE VETERINARY PROFESSION.

Since the obtainment of the Veterinary Surgeon's Act of Parliament, seven years ago, complaints have been made and doubts have been expressed as to its operation. On one side, people possessing more temerity than reason declare that it confers no benefit whatever, neither present nor prospective, on the profession; on another side, there are those who can see no present advantage to be derived from it, though they confess that in the future it will be of service; while on another side, we have complaints that it would be most beneficial if its most important clauses were only enforced with judgment and vigour. In the views of the first two classes we do not at all share, but with those of the third class we are in absolute accord. The Act of Parliament was framed and passed into law, not merely to safeguard the rights of the veterinary profession in these islands, but also to protect the public from imposition and the injury that might be wrought by impostors; and perhaps no profession was ever more liberally dealt with. So much was this the case, that had the Bill not passed when it did, it is more than probable that one so favourable would never afterwards have received the sanction of Parliament. We have examined the Acts procured by other Corporations, and can find none which gives any better *status* than does ours, so far as legal protection is concerned.

In the first place, the Act places the veterinary profession in a legal position before the country, and declares that it shall enjoy certain specific privileges of the utmost importance to it as a Corporation; some of these privileges it never before possessed, while the one or two which it derived through its Charter of 1844 were valueless, because infringement of them was not a punishable offence. All the privileges which the Act confers are legally protected, and no persons other than those whose names are on the Register of Veterinary Surgeons dare usurp the designation of Veterinary Surgeon, while the special titles of the Royal College graduates are specifically fortified by law. Not only this, but no persons other than those so registered may assert that they practise *any* branch of veterinary surgery, or are specially qualified to practise it, without incurring a heavy penalty for doing so. Further than this no law could be expected to go, and no law passed in recent years in any country with which we are acquainted ever did go.

To declare that if a non-registered person gives an animal a dose of medicine, binds up or dresses a wound, or otherwise ministers to a creature suffering from disease or injury, he is committing an offence for which he should be punished, is certainly going beyond what is reasonable and expedient; and such a law, if passed, which is more than improbable, would never be tolerated for a day in any country in which the liberty of the subject has any recognition. Our Act goes as far as any Act ever did, to our knowledge, in this direction; for while

permitting persons who are not registered to minister to animals, or at least imposing no penalty upon them for so doing if they do not transgress clause 17 (1), it yet decrees that they "cannot recover any fee or charge for acting in any manner as a veterinary surgeon or veterinary practitioner, or for practising in any case veterinary surgery, or any branch thereof." Surely this is protection enough; at any rate, those who clamour for more will never, and could never at any time, obtain it, and no other profession has ever received more.

If imposters are still flourishing that is our own fault. The Parliament has given us a powerful and most effective weapon for our protection; if we are so apathetic and foolish as not to use it as it can be used, we are only ourselves to blame, and it might even be said that our apathy was only a sign of our incompetency to utilise for our own and the public benefit a measure which was given us for that purpose.

It is the duty of every person whose name is on the Register to assist in carrying out the provisions of the Act, if he be desirous that the profession is to be benefited by it; but isolated effort in this direction can do but little, and combination is necessary to supervise the enforcement of clauses 16 and 17.

The law embodied in these two clauses is perfectly clear and definite, and there should be no difficulty in enforcing it, if a proper organisation be instituted. We have grave doubts whether the Council of the Royal College offers such an organisation, or whether it should be asked to undertake such a duty as instituting prosecutions for breaches of these clauses. Certainly the Royal College of Surgeons does not prosecute in such cases. We are inclined to think that the proposal made by Mr. Banham, in his letter which appears in our correspondence pages, is worthy of consideration—in fact, it is one we ourselves offered some time ago; for if acted upon, it would give the entire body of the profession a greater interest in carrying out the objects of these most important clauses in a manner not hitherto attempted, and would, at any rate, tend to silence those who so thoughtlessly or unfairly assail the Act and proclaim its inutility, merely because they find it easier to call upon Jupiter to aid them than put their own shoulder to the wheel.

DISCOVERY OF THE MICROBE OF STRANGLES.*

BY DR. SCHUTZ, PROFESSOR AT THE VETERINARY HIGH SCHOOL, BERLIN.

Dr. Schutz, whose labours in veterinary bacteriology have been attended with signal success in Glanders and Swine Plague, has forwarded a very interesting account of his work in a new field. He claims to have isolated the streptococcus (or chain coccus) of Strangles. The work has been very thoroughly carried out, as might be expected it would be by so eminent a specialist, unhampered by a Vivisection Act. Dr. Schütz excised a gland from a horse which was destroyed whilst suffering from Strangles, and examined the pus it contained, after staining with watery solution of gentian violet in the usual way. "The pus corpuscles showed the usual appearances, and amongst them were found astonishing numbers of chain cocci

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* A Review by F. Raymond, F.R.C.V.S., F.R.M.S., F.R.G.S.

winding about the field. The individual cocci were oval and joined at their poles. Fission took place through the small diameter. Sometimes the chain, or part of it, consisted of diplococci. The cocci were deeply stained, but not dark blue, as is the case with those of Pneumonia, but reddish-blue. Cocci were also found in the pus corpuscles, and were distinguishable from the nuclei by their reddish-blue colour, the nuclei staining dark blue. Dr. Schütz was able to make pure cultivations on and in different media, and then inoculated a number of animals. Mice almost invariably died, and the glands of the abdomen, loins, etc., were found to be infiltrated with pus which contained the streptococci. Rabbits, guinea-pigs, and pigeons appear to be immune against this virus. The inoculations were also carried out upon foals with positive results, but the most interesting case is the following:—

On the 5th August, a pure cultivate of the streptococcus was injected into the nostrils of a foal six or eight weeks old. On the 6th the nasal membrane was greatly reddened and covered with greyish-white mucus. Another dose was injected.

7th August. The membranes were more reddened; the discharge was muco-purulent. Some more cultivate was injected.

8th August. The symptoms were intensified. Streptococci were in the pus. The submaxillary gland rather swollen and painful. Pulse, 60; respiration, 14; temp., 39·5° C.

9th August. Symptoms intensified. Submaxillary gland much swollen and very painful. Pulse, 68; respiration, 14; temp., 39·5° C.

16th August One abscess burst, and streptococci were found in the pus and also in the nasal discharges.

18th August. Another abscess burst, with the same microscopical results as before. Mice were inoculated from the pus, and died five or six days afterwards.

On the 18th this foal received, injected into the lungs, a pure cultivate of equine Pneumonia coccus, and died of Pleuritis on the 28th. Pneumonia cocci and Adenitis cocci were found. They were cultivated together and injected into mice, causing death, and were found again in them.

Dr. Schütz remarks that now that the cause of Strangles is known, there can be no further difficulty in diagnosing between local lesions caused by this malady and others, such as Glanders or common Pyæmia. However, it is not impossible that many veterinarians will be found for some years to come who will draw their conclusions from other sources. He says that lungs are often sent to the Berlin High School to know if they are glandered or not, and that a positive opinion could not be given in all cases, and asserts that henceforth the difficulty will cease. He sums up his paper as follows: "The coccus of Strangles forms rosary-like chains, which are deeply stained by gentian violet, methyl blue, etc. They do not grow in meat-gelatine peptone nor in agar-agar. In broth they form white flakes at the bottom of the vessel, and in solidified serum they form transparent, glass-like drops. If thinly spread on serum the result is a dry, iridescent coating. The coccus is pathogenic in horses and mice, causing local abscesses and also metastasis." He mentions the peculiarities of other streptococci already known. Thus the streptococcus pyogenes of Ogston grows in gelatine and in agar-agar. The result in mice of injections of small doses is nil, of larger ones Septicæmia occasionally.

The streptococcus of Erysipelas never produces any effect upon mice. The Strangles streptococcus differs from the micrococcus of Kraus and the S pyogenes malignus of Flügge, in that it will not grow on gelatine nor agar.

Dr. Schütz differentiates between simple Strangles (which he calls a

purulent catarrh of the Schneiderian membrane, etc., with suppuration of the neighbouring glands) and metastatic Strangles (which is a specific pyæmia caused by infection of the blood, not by ordinary pyæmic cocci, but by streptococci of Strangles). As to which form of Strangles an animal will suffer from, this will depend upon the dose of the virus absorbed and the vigour of the resistance offered by its protecting phagocytis.

I may add that I have repeatedly confirmed Dr. Schütz's observations as far as the finding of the streptococcus is concerned. I have invariably noted its presence in all pus collected from cases of Strangles.

THE SURGICAL CURE OF ROARING.

From reports which reach us, there is reason to fear that operation for the cure of Roaring—which, it should be remembered, is only the *symptom* of a morbid condition—may be prejudiced by attempts at its performance without adequate knowledge on the part of the operators, of the operative and surgical details which must be observed in order to ensure success. Not only must the operation be properly performed, but the subsequent treatment is of quite as much importance. A knowledge of the anatomy and physiology of the larynx is, of course, necessary in order to ensure success in the *manuel opératoire*, and it is apprehended that this knowledge is not always sufficiently accurate to enable all operators to undertake such a delicate business without risk of failure; while the after-treatment demands the careful application of the best skill and judgment. To prevent, as far as possible, the risk of failure, we would recommend those of the profession who can control their impetuosity, to wait until we are able to assist them by publishing directions for their guidance in the conduct of the operation. That operative interference in this serious, and far too common, cause of unsoundness in horses, can be successfully invoked will be evident when it is stated that, of thirty roarers operated on, twenty-two have been cured of their infirmity. Everything is being done to bring within the domain of surgery a condition which has been until lately considered beyond the skill of man to remedy, and which has certainly been one of the most conspicuous of the many stigmata that soil the reputation of veterinary science. Of the pathology of the morbid conditions which lead to the production of Roaring, it would seem there is much yet to be learned; and it is high time that an endeavour should be made to dispel the obscurity which has so long been allowed to envelop a subject of such immense importance to every country which rears and uses horses. In furtherance of this endeavour, we solicit the countenance and aid of those members of the profession who can rightly estimate our motives and appreciate them.

DISEASE IN HORSES IN QUEENSLAND.

The report of Mr. James Irving, Government Veterinarian, upon the disease which proved so fatal among horse stock near Birdsville and in several parts of the Diamantina watershed early in the year, is now in the hands of the Queensland Government. Mr. P. R. Gordon, Chief Inspector of Stock in that Colony, was desirous that a veterinary surgeon should be sent to the district to diagnose the disease, but none of the local practitioners could leave their practice for the purpose. Some of the owners in the district, however, who had suffered losses from the disease, joined together and forwarded four horses

suffering from the malady to Charleville, whence they were trucked to Brisbane, arriving at the Indooroopilly quarantine grounds on the 3rd July. There they were inspected by Mr. Irving, whose report is appended. Mr. Gordon bears testimony in his covering letter to the Colonial Secretary, to the good offices of Mr. J. A. Henderson, of Morney Plains Station, in the trouble he took in forwarding the horses to Charleville and despatching them thence.

Mr. Irving's Report.

On the 3rd July I visited the sheep quarantine ground at Indooroopilly, and there examined two geldings and two mares, said to be affected with what is commonly termed the Birdsville horse disease. These horses had been sent in from about Thargomindah, and the information I received with them was, "The two worst cases are the big bay horse branded CC9 on near shoulder, and the chestnut horse with the hollow back. The bay mare branded N7H near shoulder was very bad some months ago, but now is as well as they ever get. The black mare was bad some time ago, and apparently got all right, but took bad again on the road coming in." I found them to be showing general symptoms of anæmia—conjunctiva pale, with copper tinge, pulse slow and feeble, respirations slower than normal, condition low. The bay mare was the only one which showed the characteristic dragging of the toes of the hind feet, so often spoken about by observers of this disease. None of the horses, upon being trotted around the yard, showed the symptom of choking, which is another symptom of this disease described as affecting horses which are moved smartly along, after apparently recovering from the disease.

On the 4th July I again visited the quarantine ground, and destroyed the bay mare, and then made a *post-mortem* examination. There was a wasted appearance of the muscles, etc.; the heart, lungs, liver, spleen, and kidneys showed no structural change; there was a considerable effusion of serum into the abdominal cavity; upon opening the stomach found five small tumours beneath the mucous membrane; these were filled with small, thread-like worms (*Spiroptera megastoma*) from $\frac{1}{8}$ in. to $\frac{1}{4}$ in. in length; there was a small opening from three of these tumours, through which the worms gained access to the stomach, where vast numbers of them had bored into the mucuous membrane, which was inflamed and easily detached; besides these, there were numbers of worms free in the stomach. The small intestines were particularly free from parasites, but on opening the large intestines they were found to be completely infested with these small worms, in the first part of the large intestines, named the cæcum; besides these small worms, there were a number of blood-sucking worms, from 1 in. to 2 in. in length, firmly attached to the mucou slining of the bowel.

On the 10th July I found, upon moving the horses smartly round the yard, that the bay horse, four years old, commenced to roar very badly, so much so that he almost suffocated. I destroyed him and made *post-mortem* examination, finding the same appearance of internal organs as in the bay mare, with the exception that there was not such a large effusion of serum into the abdominal cavity; but in this case the larynx was decidedly affected, as there was complete atrophy of the left laryngeal muscles, and on the inner surface of each arytenoid cartilage there was a spot about the size of a horse-bean of extravasation of blood, which looked as if it might have been caused by the two cartilages coming forcibly together during the difficult inspirations.

This disease appears to have been prevalent in the Birdsville district for the past two or three years, and generally comes on after a dry spell, and disappears again when a general rainfall takes place. The symptoms are described by various observers as follows: "The horse gets very sleepy,

and hangs his head low, nearly touching the ground, does not seem inclined to move about and feed ; the quarters tremble a good deal, and very often when the horse is trying to walk forwards he will stagger backwards and sit on his haunches like a dog or fall over altogether, and when drinking at a water-hole is liable to stumble in, and so get drowned. When very bad a yellowish matter runs from the nostrils and the eyes get quite cloudy-looking, with considerable matter about them; the legs also become much swollen. The duration of the disease is from a week up to seven or eight weeks, the mortality being great, and the horses that do recover from the disease are said never to be of any use for work again, as they drag the toes of their hind feet on the ground so much that they are apt to wear away the horn completely, and so expose the bone ; also when cantered or trotted along for a few hundred yards they will be seized with a fit of roaring, which in some cases will absolutely choke the animal and cause him to fall. Teamsters' horses and horses that are travelling about do not seem to be so much affected as station horses.

From the history, symptoms, and *post-mortem* appearances, I consider this disease to be pernicious anæmia, brought about by monotony of diet and intestinal and stomach worms. The horses are living on dry grasses for some months, which monotony of diet so reduces the system that it is then in a poor state to resist the effects of the small thread-like worms which may have been in the stomach for some time, or may at this very time be taken into the animal's system through tainted water ; and it is a well-known fact that when any animal's system gets below par, as it were, then is the time that parasites assume the ascendency and cause so much havoc. We then get deficient assimilation of food, loss of nerve-power, atrophy of the laryngeal muscles, causing the roaring described above, and also serous effusion into the thoracic and abdominal cavities, and in some cases about the spinal cord, causing paralysis.

Preventive measures appear to me to be the only advisable course, as the treatment of numbers of horses in the far-away districts is not likely to be attended with very good results, even in a disease amenable to treatment, which this disease by no means is. I would recommend that a lick, composed of common salt 6 parts, sulphate of iron 3 parts, and bone-powder (made by burning bones and then powdering them) 1 part, be put in accessible places during these dry spells, and also change the feeding-grounds every short time ; even if it is only twenty miles removed it will be likely to keep the animals in better health. With regard to treatment, turpentine will be found one of the most useful and easiest got remedies. One tablespoonful of turpentine mixed with a pint of milk, or, where eggs can be got, add two eggs well beaten, and give as a drench to the horse night and morning, and continue this daily for a week or ten days. After this arsenicum, nux vomica, and strychnine would prove very beneficial ; but, as before said, the difficulty lies in treating horses so far away, as these last remedies require administering under careful supervision.

I have to state, that on the 10th of July the black mare began to show bad symptoms of staggering about, and the eyes were clouded. The mare and chestnut horse have all along been getting in their food daily some of the above lick, but since the 10th of July they have had given to them, in addition to the above, a drench each, composed of four fluid drachms each of oil of eucalyptus and oil of turpentine and two eggs, and they seem to be coming on well ; but I will report further progress.

VETERINARY HONOURS.

LAST year the veterinary profession was somewhat elated at the distinctions conferred upon three of its members by Her Majesty—upon one for civic, and upon two for professional services—and it was a matter for congratulation that the honour of knighthood had for the first time been received by a veterinary surgeon. Distance and scanty information from our Australasian colonies with regard to our colleagues had misled us in this respect, and a valued correspondent in Adelaide now writes to inform us that a gentleman, a graduate of the Royal College of Veterinary Surgeons residing in Melbourne, had already been knighted. This gentleman is Sir Charles McMahon, who graduated in 1852 and went to Australia, where he practised for some years. He then joined as a partner in a banking business, and has been very successful in it, having of course retired from the profession. Entering the sphere of politics, by his great ability and integrity he was elected to several important offices, and was at last chosen Speaker of the House of Assembly in Victoria, during which period he received knighthood in recognition of his services. In the Register of Veterinary Surgeons he appears as McMahon, Charles. It should be McMahon, the Right Honourable Sir Charles. This, though also a civic and not a professional reward, is a step higher than any yet achieved in this direction.

JUDICIOUS FEEDING OF HORSES.

OUR excellent contemporary, the *National Live Stock Journal* of America, frequently contains papers of much value to those who manage and rear domestic animals, marked as they are by scientific knowledge practically applied. The following appeared in the number for August, and as it contains much which is either imperfectly known or little observed in horse management, we venture to reproduce it:—

Many of the ailments of domestic animals are due to improper feeding and care, and the loss resulting from these might be saved by the exercise of more judgment in the management of herds and flocks. Skilful care is especially required with horses, for, on account of the comparatively small size of the stomach, they must be fed oftener and more promptly than cattle. The ox has a stomach capable of taking in the large quantity of about twenty-two gallons, while the capacity of the horse's stomach is only about fifteen quarts. Not only must the horse, on this account, be fed frequently in order to digest promptly, but the quality of the food must be more nutritious. Particularly is this the case when he is put at hard work, for although when idle he can maintain health if fed largely on hay or other bulky food, when he comes to work he has not the time required to eat enough of this to sustain him, and he must have a more nourishing diet. We will again give an explanation of why this is necessary.

In the process of mastication, dry hay becomes mixed with four times its weight of saliva, while oats are only furnished with an amount of saliva equivalent to their own weight. A horse in eating ten pounds of hay loads his stomach with forty pounds of saliva in addition, or fifty pounds in all, whereas, in consuming an equivalent amount of oats, say five pounds, he takes but five pounds of saliva, or ten pounds in all. In introducing into the system a given amount of flesh-forming aliment in the form of oats, the stomach is filled to only one-fifth the extent that would be necessary if the same quantity of nutrient material were given in the form of hay. But the ten pounds of hay with its saliva could not all be accommodated in the stomach at once, but only at three times, unless the organ is to be distended to more than the normal healthy plenitude of two-thirds its full capacity. The five pounds of oats, on the other

hand, with its five pounds of saliva, will not fill the stomach to one-third of its capacity, but leaves the amplest opportunity for freedom of movement and the secretion of the gastric juices.

The grain contains about one-half more respiratory food in a given bulk than the hay, and not more than one-fourth the amount of the indigestible woody fibre, so that in oats and other grains we have at once a doubly nutritious food, with incomparably less superfluous matter, more easily masticated, more readily permeated by the juices of the stomach, and capable of more prompt and thorough digestion. By substituting the one kind of aliment for the other, we greatly reduce the vital expenditure in the work of mastication and digestion, the stomach is cleared and the animal sooner fit for work after a meal, and, what is of no less importance, there is avoided the accumulation of indigestible matters in the bowels, which unduly increase the bulk and weight of the body, hinder the dilatation of the chest and the filling of the lungs, and impair the free movements of the body and limbs in active work.

But the food that will support the horse in idleness must be increased for hard work, and if we attempt this with hay alone, we soon find that the capacity of the stomach is unequal to the demand made upon it. Supposing a horse to have consumed twenty pounds of hay per day, he must have spent at least four hours in its mastication; and, by adding four times its bulk of saliva, increasing the whole to 100 pounds, he must have filled the stomach five or six times to its physiological condition of two-thirds its capacity. For really hard work the ration would have to be doubled; but if we increase it to thirty pounds only, the period of mastication will be prolonged to at least six hours daily, and the mass of material swallowed will be increased to 150 pounds, which will fill the stomach eight times in succession. This state of things is manifestly incompatible with hard or prolonged work, to say nothing of the over-distended belly, the impaired wind, and the soft, flabby muscles, which unfit the beast for anything faster than a walking pace.

The introduction into the diet of a large proportion of grain is, therefore, a condition essential to the obtaining of a great amount of work from the animal machine; but as this is, in a sense, an artificial regimen, it entails a series of dangers that do not belong to the more natural dietary. Some of these may be here noticed:

Overloading the Stomach.—Almost any horse will overfeed himself at a corn bin, but this is especially likely to be the case with an animal accustomed to an exclusive diet of hay. Hay contains only half the amount of albuminoids that are present in the same weight of grain, and when swallowed is mixed with four times its weight of saliva, so that its nitrogenous matters are speedily dissolved out and digested, and the whole can be safely transferred to the intestine. Oats, on the other hand, require a longer sojourn in the stomach, because there is five times as much nitrogenous matter present when the organ is filled with insalivated oats as when filled with insalivated hay. Since this nitrogenous material must be digested in the stomach, and will produce serious digestive disorder if hurried into the bowels unchanged, too great care cannot be exercised in providing against the sudden ingestion of an excess of grain.

Another evil result of overloading the stomach with grain is the paralysis and suspension of its functions. All hollow muscles are paralyzed when over-distended, and if this happens to the stomach of the soliped the danger is extreme. In the first place, the horse can rarely relieve himself by vomiting. This act is prevented by the narrowness of the gullet where it joins the stomach, by the presence of loose folds of mucous membrane on the gastric surface, which close over the œsophagean orifice like a valve, and by the point where the gullet opens being on the middle of the lesser curvature of the stomach,

in place of at its end furthest from the intestine, as in vomiting animals. Vomiting is only possible (1) when the lower end of the gullet has become unnaturally dilated from local disease, or the habit of swallowing air (wind sucking); (2), when from excessive distention of the stomach, by food or gas, the mucous folds are completely effaced; or (3), when the organ has been ruptured and the loose mucous folds done away with by the dragging of the mucous membrane through the wound with the escaping food. All hope, therefore, of the satisfactory relief of a sound horse by vomiting may be set aside. In a similar condition in the ox we could successfully puncture the distended organ and draw off the gas, or even lay it open and empty out its contents, but this is forbidden in the soliped by the fact that the stomach is separated from the walls of the belly by the great masses of the large intestine, which must be transfixed before the gastric cavity can be reached. Then, again, wounds of the abdomen are incomparably more fatal in the horse than in the ox, because of the susceptibility to violent peritonitis. The ox, again, might be relieved by passing a probang from the mouth into the stomach, but in the horse the passage of such an instrument is an operation requiring the greatest delicacy in its manipulation, and could scarcely be accomplished without first throwing the animal, which would in itself be almost necessarily fatal in a case of over-distended stomach. Almost the only hope lies in the attempt to rouse the stomach to contract and force the food on to the intestine. But here new difficulties are met with, for any medicinal agents introduced still further distend the already overstretched viscus, aggravate the suffering, and threaten rupture. Again, the medicines thrown into the stomach only lie there as irritants until they are passed on into the intestines, for the healthy equine stomach does not absorb, much less the overfilled and paralysed one. In the slighter cases only can the accumulated material be passed on into the bowels, and though momentary relief is obtained, it is at the expense of a violent or even fatal intestinal disorder; for the albuminoids, which abound in grain, find in the intestines no digestive fluids capable of transforming them into peptones, but undergo fermentation, evolve gases and cause cramps, inflammations, and ruptures.

Short of such extreme injuries the slighter over-distentions of the stomach impair its tone, lessen the vigour of its contractions, reduce the quantity and alter the quality of its secretions, and lay the foundation of dyspepsia, poor condition, flabby muscles, swelled limbs, and a general unfitness for work.

Long fasts, hurried feeding.—These have a similar tendency to the over-distentions just referred to. While a ruminant has been known to survive over a month without partaking of food, a horse cannot endure long abstinences without serious injury. His stomach, which is so frequently replenished in the natural condition, becomes weak and atonic when long empty, and fails to digest the food that should have been sooner applied. Moreover, food in such circumstances is liable to be swallowed hurriedly and without sufficient mastication, and the weakened organ has to contend with a sudden distention which it can ill afford to bear, and this with food that is difficult of digestion, and hence increasingly liable to irritate.

The lesson, obviously, is to avoid long fasts, and especially long fasts followed by heavy meals of grain, and to feed hard-working animals at least thrice daily, with a moderate amount on each occasion, and at a regular and unvarying hour for each meal. If an animal is inevitably subjected to a long fast, ravenous and hurried feeding should be obviated by giving first a little warm gruel, or a handful of warm bran mash, to be followed, twenty minutes or half an hour later, by the ordinary feed. This has the effect of refreshing and invigorating the animal, and at the same time removing the feeling of ravening and vacuity without incurring any danger, immediate or remote, to

the stomach or bowels. It is sometimes sought to take the edge off the appetite by feeding first a little hay and then furnishing the grain; and in many cases this will answer well, but it has the disadvantage of mixing the grain swallowed with a great accumulation of chewed hay and saliva, with which it is especially liable to be carried on into the intestines before its albuminoids have been dissolved out and digested. Hence this system will occasionally beget colics and indigestions. It is the safest course not to allow the grain for some time after any considerable quantity of hay has been eaten, and still better to give the grain alone; acute hunger having been first appeased, if necessary, by gruel or a little mash.

Watering after a feed.—Another common fault in the alimentation of horses is giving water just after a full feed of grain. The first effect of this is to largely distend the stomach; and the result may be as serious as if the material were masticated grain and saliva. But, should this danger be avoided, matters are not necessarily left in a better state. The sudden and excessive influx of water is likely to wash on much of the contents of the stomach into the intestines before the nitrogenous principles have been digested, and fermentation, extrication of gases, over-distentions, colics and inflammations result. Even this is not all. The application of an excess of cold water on the mucous membrane of the stomach and intestines, causes vascular congestion and violent muscular contractions, so that all tend to digestive disorder of a dangerous nature. Copious draughts of iced water are hurtful alike to man and beast. If it must be taken, it should be in small quantities only and frequently. But a drink of water of moderate temperature, just after a feed of grain, is full of peril to the soliped. Thirst should be allayed before the feed is given; and if any is allowed after, it should be merely a mouthful, until the lapse of one or two hours' time has been had for gastric digestion. After a feed of hay there is comparatively little danger. From the excessive salivary addition to the hay, and the comparatively small amount of its albuminoids, these are rapidly dissolved out and digested, and the further addition of water is often rather favourable than otherwise in hastening its progress into the bowels, where the digestion of its starch, sugar, fat and other respiratory elements may be completed.

Work after a feed.—This is another point which too often receives but scant attention. Almost every one has heard of the experiment made on two dogs, one of which was used in rapid hunting, for the first hour after a meal, while the other lay curled up in his kennel. Both were killed at the end of the hour, and while the idle dog's stomach was found empty, and the intestine full of peptones, the proceeds of the digested meal, the stomach of the hunting dog contained the food unchanged, and the first intestine was comparatively empty. So it is with the horse. The expenditure of the vital energies upon violent muscular effort, arrests or retards digestion; and many a horse perishes from acute indigestion following a meal, which might have been saved had he been allowed an hour's rest before he went to work. But short of acute and fatal indigestions, this maltreatment is productive of weakness and atony of the stomach, of chronic indigestion, with gastric and intestinal catarrh, and, above all, of heaves, through the derangement of the pneumogastric nerve which is distributed to both stomach and lungs.

Watering when exhausted.—Much evil is often done by allowing a full draught of cold water to a horse that is heated and worn with travel, the cold element producing, first the congestion and disorderly movements of the stomach and bowels above referred to, and, later, by sympathy or interdependence of functions, disorders of the muscles, skin and feet (founder). But while excess of cold water is always hurtful, a swallow or two is no more injurious to a horse in a state of warmth and perspiration than to one that is

cool and quiet. It is the excess that is dangerous; and, above all, if the beast is worn out as well as heated by exercise. Then it is that the nervous system is particularly impressible, that the economy is less able to recuperate, and that congestions, chills, spasms and inflammations are most liable to result.

Such precautions are simple and obvious enough, in view of the functions of the stomach in this animal, and yet they are fundamental to the maintenance of good health, which is often sacrificed by their neglect. A careful feeder is indeed the most valuable of equine attendants. Often are studs run down, put out of condition, unfitted for work and subjected to a long train of ails, because their feeder, with the best intentions, is yet deficient in that sound judgment or care which is requisite to maintain a sharp appetite and a vigorous digestion. And frequently, too, are such studs improved, and the expenses for feed, for medical and surgical attendance, and for the replacing of worn-out animals, enormously reduced, by changing the feeder or by introducing a more careful and judicious system in the dietary.

ON THE OCCURRENCE OF PECULIAR ORGANISMS IN THE BLOOD OF HORSES, AND THEIR SUPPOSED PATHOGENIC NATURE.

BY SURGEON-MAJOR D. D. CUNNINGHAM, M.B., SPECIAL ASSISTANT TO THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA.

In the course of 1880, Inspecting Veterinary-Surgeon G. Evans submitted a report on "Surra" as a newly diagnosed disease very prevalent among horses in the stations of the north-west frontier, and, according to his observation, constantly associated with the presence of numerous peculiar organisms in the blood. He showed that inoculation of the blood of diseased animals into healthy ones was followed by the development of the disease in the latter and by the appearance of the parasites in the blood. At the same time it appeared that the presence of the parasites in the blood was not necessarily accompanied by the presence of any morbid effects in the case of certain animals, for a dog which had been inoculated with blood from a case of "Surra," and subsequently given by Dr. Evans to the late Dr. Lewis for examination, continued for long after, and when apparently in perfect health, to show an abundance of the organisms intermittently in its blood. According to Dr. Lewis they were very similar to, if not identical with, the flagellated organisms discovered by him in the blood of apparently healthy rats in 1878.

Subsequently Veterinary-Surgeon J. H. Steel, A.V.D., reported on "an Obscure and Fatal Disease among Transport Mules in British Burma," which appeared in 1883, and continued to prevail in the two following years. This disease he regarded as a relapsing fever closely allied to relapsing fever of the human subject, and identical with the "Surra" of Dr. Evans's report, being, like it, accompanied by the presence of numerous organisms in the blood. Dr. Steel believed these to be Schizomycetes of spirillar type, closely allied to *Spirillum Obermeyeri* of human relapsing fever. He, like Dr. Evans, found that the disease was communicable from sick to healthy animals by means of inoculations of blood, and that the parasites were then to be found in the blood of the infected ones.

During the course of 1886, an epidemic prevailed among horses, ponies, and mules in Meerut which, according to Veterinary Surgeon W. D. Gunn,

A.V.D., was not of an anthracoid, but of a typhoid nature, the symptoms during life differing slightly from those of Anthrax in various respects, amongst others in the fever being of a relapsing in place of a continued character. The *post-mortem* appearances were described as "very similar to those of Anthrax," with the exception that there were ulcerations in Peyer's patches. Mr. Gunn cultivated a drop of blood in gelatinised chicken broth and obtained no *Bacillus anthracis*, but a crop of minute bacilli and numerous small micrococcoid bodies which he believed to be spores. He does not appear to have observed the presence of any spirilloid organisms in the blood.

A difference in opinion prevailed among the veterinary authorities as to the nature of the disease, some agreeing with Mr. Gunn as to the specific distinctness of the disease, others holding that "both in its course and *post-mortem* results it resembled ordinary Anthrax." Specimens of blood obtained from diseased animals were forwarded to Dr. Barclay for examination, with a view to aiding a decision of the question, and some of these were sent on by him to me. The first samples which reached me consisted of two capillary tubes containing blood and closed at either end with common sealing-wax. The tubes were first carefully washed with a solution of corrosive sublimate and with spirit, and were then allowed to dry. The tip of one of them was broken off by means of a freshly heated pair of forceps and the minute clot and serum introduced into a little freshly sterilised salt solution of a strength of 0·75 per cent. A portion of the clot was used for preparations, and the rest of it was broken up in the solution and used to inoculate a plate-culture of agar-agar peptonised meat-juice. The contents of the second tube were used for preparations. The preparations showed the presence of a few small straight bacilli and micrococci, and in one instance numerous large spirilloid bodies at a particular part of the clot. The cultivation yielded a few colonies of straight bacilli of considerable size, and innumerable colonies of *Micrococcus luteus*. Subcutaneous injection of a solution full of the straight bacilli into the bodies of guinea-pigs produced no appreciable result.

The second set of samples consisted of four of the common microscopical glass slides, with a central hollow on one surface. The hollows contained blood, and were covered by cover-glasses. The contents were used for plate-cultures and preparations. In one specimen the clot was full of small straight bacilli, in the others the characters agreed generally with those of the previous samples, but in none of them could any spirilloid bodies be detected. The results of cultivations were similar to those of the cultivation from the first sample, and in no case was there any evidence of the presence of *Bacillus anthracis*.

The spirilloid organisms in one of the first set of preparations presented the following characters. They were present in large numbers in the thin stratum of blood along a portion of the edge of a thick mass of clot, among the blood corpuscles which had been pressed out of it in the course of preparation. They consisted of filaments of various lengths, some merely curved or sinuous, others, and specially the longer ones, showing one or two distinct spirals. Both extremities appeared to be pointed, but one was apparently thicker and somewhat blunter than the other. In some cases a slender flagellar process could be recognised, continued for some distance from the more pointed extremity. The length of the larger specimens, omitting the curves, was about 25 μ, the breadth varying in different parts of the thicker portions of the body from 1·5 μ to 0·78 μ. The filaments were sometimes only very slightly curved, but were in no instances straight. They were always quite smooth in outline, and showed no granularity of texture. In one specimen a pale vacuole-like area was present in the middle of the length of the filament. There can, I think, be little doubt that these bodies are identical with

those described by Drs. Evans and Steel. The fact that only mounted specimens came under observation rendered it impossible to ascertain the character of their behaviour in the blood, but their general structural features agree very closely with those described by Drs. Evans and Steel as present in their specimens, and as Dr. Lewis pointed out in regard to the latter, are almost identical with those of the organisms discovered by him in the blood of rats. The measurements given by Dr. Lewis of the organisms in the rats' blood are 25 μ by 0·8 μ to 1 μ, practically identical with those of the larger filaments in the present instance.

The above facts clearly go to show one thing—namely, that the term Anthrax has been used very loosely as a descriptive term for various forms of disease in horses in India, and that some of these are certainly not specific Anthrax, dependent on the invasion of the system by *Bacillus anthracis*. It is only now, when systematic thermometrical observations are carried out and cultivations of the blood are conducted, that this begins to be appreciable, and it certainly is very desirable that the matter should be thoroughly investigated and trustworthy information obtained to what extent true Anthrax really does occur. It certainly is remarkable that with such extremely common occurrence of so-called Anthrax in horses so little is heard of the disease in cattle.

It also appears that in certain forms of equine disease peculiar spirilloid organisms occur in large numbers in the blood, and that the disease has occurred in healthy animals subsequent to inoculation of such blood, but this is all which has been as yet demonstrated. The statement that the disease is closely related to human relapsing fever is certainly not supported by the thermometrical data, and the truly spirillar nature of the parasitic bodies has yet to be demonstrated. Even were this conclusively done, there would still remain an absence of evidence to show that they are casually related to the disease. There is apparently as yet no evidence that it has been definitely ascertained that such organisms are never present in horses in health, as they were in the case of the dog into which they were introduced by inoculation, and as, at all events, similar organisms have been shown by Dr. Lewis to occur in the blood of healthy rats. It has further to be shown that they are invariably present in cases of the disease. In so far as thermometrical data go, the disease observed by Mr. Gunn at Meerut appears to have been identical with that studied by Mr. Steel in Burma, and yet the presence of such organisms in the blood was not apparently observed, and in so far as my own observations go was not constant. This may, no doubt, possibly be due to the specimens of blood having been taken at times when the organisms were absent or present in very small numbers in the general circulation, as it is recorded that their appearance is of an intermittent character, and as regards the samples examined by me may possibly have been connected with the length of time elapsing between the period at which they were taken and that at which they came into my possession. The facts are, however, at least such as to render it additionally necessary that definite evidence should be forthcoming to show the constant association of the disease with the presence of the parasites. The fact of the occurrence of the disease in previously healthy animals and the appearance of the parasite in their blood after inoculation do not afford data of any conclusive value. They certainly show that the parasites can be transferred from the body of one animal to that of another, but that is all. There is nothing to show that they gave rise to the associated disease. No clean artificial cultivations have as yet been carried out, and all inoculations have been conducted by means of blood directly transferred from the diseased to the healthy animal; so that, fully granting that the disease has been shown to be inoculable and that the parasites are similarly transferable, there is yet nothing to show that the

two phenomena hold any beyond a parallel relation to one another; there is nothing to show that the transplantation of the parasites was the cause of the development of the disease in the inoculated animals. Whilst, on the one hand, there is this entire absence of positive evidence of the pathogenic function of the parasites, there is, on the other hand, some evidence pointing in an opposite direction—evidence which is, at all events, calculated to raise additional doubts as to their essential relation to the disease. This lies in Dr. Lewis's observations, which have been already referred to, on the persistent intermittent occurrence of large numbers of the organisms in the blood of a dog long after inoculation and quite apart from the presence of any morbid symptoms.

GESTATION IN MARES.

An extensive horse-breeder in Oregon, U.S.A., has been making some interesting observations on the duration of pregnancy in mares, as influenced by the season. He writes, "On the 20th of July, 1879, I bred a mare, and she foaled on the 30th of the following May. The next spring I bred my mares early, and they carried their foals about eleven and a half months. The thought occurred to me then that mares bred early in spring carried their foals longer than those bred later. For the next two seasons I took charge of a band of mares, and found that those bred in April carried their foals longer than those bred in May, and that those bred in May went longer than those bred in June and July. Since then I have had considerable bad luck with my mares getting with foal on the range by scrub horses, and have only kept the time of those that I was certain of as to time of breeding. The average number of days of gestation for nineteen mares bred in April is 348 days; average for twenty-three mares bred in May is 345 days; average for thirteen mares bred in June and July is 338 days; longest time of any mare bred in April is 360 days; shortest time of any mare bred in April is 332 days; longest time of any mare bred in May is 360 days; shortest time of any mare bred in May is 323 days; longest time of any mare bred in June and July is 354 days; shortest time of any mare bred in June and July is 314 days. The last mare referred to was a virgin mare, and very fat at the time of breeding, and continued so up to the time of foaling. Mares here in Oregon usually get very poor during the winter months, but have an abundance of nutritious grass to run on during the spring and summer months. It is my opinion that mares that have an abundance of nutritious food for a time previous to foaling bring the fœtus to maturity sooner than they would were they kept on a small amount of very innutritious food."

Proceedings of Veterinary Medical Societies, &c.

MIDLAND COUNTIES VETERINARY ASSOCIATION.

A quarterly meeting of this Association was held on Friday, August 17th, at the "Bell Hotel," Derby. Mr. J. M. Parker took the chair, in the absence (through indisposition) of Mr. R. C. Trigger, President of the Association. There were present—Captain Russell, Professor Pritchard, Coe, J. Aitken, Greaves, H. Olver, W. Carless, Rossell, Malcolm (Hon. Sec.), Messrs. Jones,

Hodgkinson, Wragg, Barling, Wartnaby, Barnes, J. G. Burchall, H. Stanley, and Mr. Briggs, of Bury.

Letters of apology were received from Sir H. Simpson, Professors Walley and Williams, Messrs. Taylor, Tailby, Over, and Carless.

The minutes of the last meeting were read and confirmed.

The SECRETARY said he had received a letter informing him that the President was unable to be present, through a severe attack of illness.

Captain RUSSELL moved that a telegram of sympathy be forwarded to the President, expressing the hope that he would soon be convalescent. This proposal was at once acted upon, and before the termination of the meeting a reply was received from Mr. Trigger, returning his thanks, saying he was slowly improving, and hoping the meeting would be a pleasant and instructive one.

Mr. George Wartnaby and Mr. T. Duckworth were elected members of the Association.

The SECRETARY then read a letter which the President had sent to the Members of Parliament in the district embraced by the Association. It stated that Sir Frederick Fitzwygram, M.P., had, in conversation with the Chancellor of the Exchequer, obtained a promise to give veterinary surgeons in actual practice the same exemption from payment of the horse-tax as it is proposed under the Excise Duties' Bill to give to clergymen and medical men, if an amendment to that effect were approved of by the House. It then solicited the support of all the local Members when Sir Frederick's amendment came before the House.

Captain RUSSELL moved a resolution, expressing the satisfaction with which they had heard of Sir Frederick Fitzwygram's action, and tendering him the thanks of the meeting. He took it that no one in the room could afford to keep a horse for mere pleasure, and he held, both in his capacity as a magistrate and as a veterinary surgeon, that an active practitioner should be exempt from the tax.

Mr. OLVER said he had communicated with three or four Members of Parliament, and secured their support for the hon. Baronet's resolution. He claimed exemption, as being a branch of the medical profession. He thoroughly agreed with Captain Russell's resolution, and would be happy to second it, so that the hands of Sir Frederick Fitzwygram might be strengthened.

The motion was passed, and a copy ordered to be forwarded to Sir Frederick.

OPERATION FOR ROARING.

Captain RUSSELL gave a short account of an operation performed by Mr. Fred Smith, at Newcastle-upon-Tyne, upon two horses, with the view of curing them of Roaring.

Mr. JONES said he had performed operations on a dozen horses, but there was not a sufficient lapse of time yet to say whether they would be successful. All the operations he had performed by introducing his own tracheotomy tube into the trachea, the tube itself being in diameter fifteen-sixteenths of an inch inside, had been most successful.

Professor PRITCHARD said the object of Dr. Fleming was undoubtedly to relieve a roaring horse, but confessed his inability to understand how this operation would bring about the desired result. If he had correctly gathered the theory expressed at the First Avenue Hotel a few nights previously, the operation would most unmistakably fail. The theory he held—and it would take a great deal to disabuse his mind of it—was that the vocal chord had nothing to do with Roaring, and until he was satisfied that it could be brought into a relaxed condition he should have very strong doubts that the

operation would succeed. He thought it was a mistake to attempt to remove the arytenoid cartilage, because by doing so they were rendering the animal liable to choke.

Mr. JONES: I consider the tissue white fibrous in the vocal chord.

Professor PRITCHARD: If it were white fibrous tissue you would have no voice or sound. It is upon that the voice depends, and upon the control of the muscles over the chordæ vocalis our great singers are enabled to produce high and low notes.

Captain RUSSELL: I am compelled to agree with Professor Pritchard, for I have rendered my unfortunate animal dumb by removing both vocal chords.

Mr. GREAVES advocated for the operation a fair trial before condemning it. Hitherto Roaring had never been cured.

The discussion then terminated.

Mr. WM. HUNTING then read a paper

ON SURGICAL SHOEING.

After some general remarks on shoeing and the necessity of practical acquaintance with the art, the essayist said he proposed to consider his subject in two divisions—first, as adopted for certain conditions of the leg; second, as adopted for conditions in the foot. He next referred to the practice in some towns of applying high-heeled shoes to horses lame from any cause, upon the theory, he presumed, that such a shoe assisted to rest the leg. He considered such a practice purely empirical and oftentimes injurious. Any alteration of a shoe from the level should only be adopted with a definite object and a distinct understanding of its effect. He then proceeded to consider some of the various effects upon the limb we might wish to obtain, as follows :—

TO EXTEND OR FLEX SOME JOINTS.

This indication looks a little vague, and the question naturally arises, What joints? In answer I submit that it is nearly impossible to alter the relative proportions between the back and front of a horse's foot without affecting the limb above. When any raising or lowering of the heel, any shortening or lengthening of toe does affect the leg, it must directly affect every joint up to the knee and hock, and any limitation or excess of movement in these two large joints must indirectly affect every other joint of the leg.

Practically, the fetlock and knee or fetlock and hock are the joints which we attempt to react on by altering the form of the shoe.

The methods adopted to flex or extend the joints are two—raising the heel of the shoe limits the extension and facilitates flexion; lengthening the toe of a shoe promotes extension and limits flexion. To a certain extent these ends could be attained by altering the relative proportions of the hoof. We could leave the wall at the toe long, or we could shorten it whilst allowing the heels to grow down. The objection to this plan is that as soon as you retain any single part of the hoof of a disproportionate size you do harm to some other part. Overgrown heels soon cause a wasted frog; an overgrown toe means a weak wall, because it loses the support of the sole, which is unable to retain its integrity, as does the horn of the wall, when growth is disproportioned to wear. It is advisable, then, in any attempts to alter the relative positions of foot and limb, not to interfere with the natural proportions of the foot, but to make the alteration in the shoe.

In the case of Bent Knees, unaccompanied by any acute disease, we have a condition where extension—perhaps I ought to say forcible or excessive extension—of the joint is indicated. We attempt this by elongating the toe of the shoe, so that at each step greater extension of the knee is required to

overcome the resistance of the toe in rotating upon the ground. The result is that at each extension the contracted ligaments and tendons are stretched, and gradually the bones are brought back to their proper position.

In cases of Sprained Tendon or Ligament our object is just the opposite. We wish to limit extension of the bones upon each other, and therefore we alter our shoe so as to prevent over-extension. We raise the heels of the shoe, and thus relax the ligaments and tendons. In cases of Spavin it is said that a good effect follows the use of a high-heeled shoe, and it seems feasible, because the raising of the heel must prevent over-extension of the joint when the foot is on the ground during progression. In this case, however, we have one disadvantage, in that a spavined horse always wears hard on the toe, and we all know that the higher the heels of a shoe the more quickly the toe is worn. This disadvantage is met by another alteration of the shoe; viz., turning up the toe out of wear, or as it is commonly called, rolling the toe. This is rendered most effective when the toe of the hoof is first rather over-reduced, and the shoe fitted to it with a curved adjusture.

TO FIX THE LIMB.

Splints on a horse's leg have to be very strong and very firmly attached to be secure. This often leads to abrasions of the skin. If the case be one in which it is practicable to remove the shoe a very firm splint can be applied, having its lower attachment to the shoe. A long bar-shoe is made, and the bar cranked upwards. Through this a hole is punched, and the end of the splint being passed through the hole, is secured by a nut. For fractures, of course, this is an impracticable arrangement, but for open joints or other conditions where the movement of a joint must be prevented it is very useful. I have used it with good effects in fixing a knee which was badly cut, and when movement interfered with the healing process.

TO MODIFY DEFECTS IN ACTION.

There are only two conditions I wish to notice under this head—one in which the horse "goes on his heels," the other in which he "goes on his toes." The result is excessive wear of the shoe at those parts. To meet this we often see the shoe thickened at the spot. In these cases I find that the horse always goes best when the shoes have been on some time, and worst just after being shod. When an engineer finds excessive wear at some part of his machine he does not thicken that part; on the contrary, he follows the indication that there is something superfluous there—something in the way—and he removes it. We also should, I think, follow the indication of the horse, and instead of forcing the part into greater attrition, do the opposite—*i.e.*, remove it from wear as much as possible. If it be the toe, shorten the toe of the foot, and turn up the toe of the shoe, following as near as possible the line or curve of wear shown by the old shoe. If it be the heel, lower the heel of the foot, lengthen the heel of the shoe, and curve it slightly upwards in imitation of the form of the old shoe produced by wear.

The same principle applies when wear is excessive upon either the outside or inside branch of a shoe—lower the wall on the worn side.

TO PREVENT INJURY WHILST STANDING OR LYING.

Capped elbow I have always considered due to a bruise by the heel of the shoe whilst lying down. Recently I have been a little shaken in this opinion by seeing a large stud of horses, apparently well shod, suffering to the extent of about 30 per cent. from capped elbows. The veterinary surgeon in attendance has convinced himself that the shoeing is not the cause, and that it

is the result of bruising by injury on the floor, either in rising or lying down. He does not deny that the shoe irritates an enlarged elbow, or even that it may make it worse when once it has happened. One of his arguments seems to me to have some force; viz., that capped elbow nearly always first appears suddenly, whereas we should expect it to arise gradually if the repeated pressure of the shoe were the only exciting cause.

I am not much a believer in shortening the heels of a shoe to relieve a capped elbow, unless the heel be excessively long. I find even the heel of the foot will cause irritation, and I trust to a thick circular pad around the pastern.

TO PREVENT INJURY OR ANNOYANCE WHILST MOVING.

Under this head I include all the alterations of shoes adopted to prevent "clacking," "over-reaching," "cutting," and "speedy-cutting."

I never knew the blow of a hind shoe against the fore, which gives rise to that most irritating sound called "clacking," to do any harm to the horse. It is seldom produced by an old horse or one in condition. Tired horses, green horses, and especially those with a rolling, "slomicky" gait do it. I fancy, too, that the driver and the bit are sometimes to blame. The front shoe is struck on the inner circumference of the toe by the toe of the hind shoe. This can only be done when the fore-foot is in such a position that the clip is pointing to the ground and the shoe presenting its wearing surface at right angles to the ground. The alteration required is to make the front shoe concave on the ground surface, and to fit the hind shoe with its toe well back. In some cases the horn at the toe of the hind foot may be left projecting in front of the shoe. I always advise, too, that the hind shoes be level—no calkins.

Overreaching only occurs at the gallop, and in my experience never if the hind shoe be rounded on its inner circumference. Such a shoe is easily made in a "cress," or any shoe may be altered to the desired form by cutting away the iron of the inner circumference at the toe by means of a fuller, and then filing it up.

Speedy-cutting occurs at the trot but seldom, unless a horse is overpaced. Its prevention is more a matter of condition in the horse than an injury due to shoeing. No alteration of shoe will stop a horse from "dishing," but even animals with the most defective action will cease to "speedy-cut" when they get into hard condition. I have found the use of a three-quarter shoe to be accompanied by no return of the injury.

Cutting.—The most common injury to the legs for which we are called upon to alter the shoe is decidedly "cutting." All farriers and nearly all veterinary surgeons fancy they are specially gifted in devising plans to cure this evil. That the injury is done with the inside toe of the opposite foot is certain. At first sight, then, it seems logical to say, "Cut away the inside toe of that foot—both shoe and hoof—and the injury will cease." Unfortunately, it is common to see a horse in which this has been done to the greatest extreme still hitting the fetlock with the remains of the opposite hoof. We may safely say, then, that cutting is not merely due to a prominent shoe or a prominent hoof. It is not seen more in big-footed than small-footed horses. It is not even dependent on the weight of shoe, and we all have seen horses at daily work with coarse, full-fitted shoes that never "cut." Every young horse "cuts" when first put to work; horses that are weak or tired cut. Long-legged horses are more liable to cut than short-legged ones.

Half a dozen different farriers have half a dozen different ways of stopping "cutting," and all can produce instances of successes after one or more of their neighbours have failed to stop it. Did any man ever see a horse in good hard condition that had been at work a year "cut" his legs unless under

some exceptional circumstances, such as an extra long journey, which gives rise to leg weariness, or a change of climate, which often produces lassitude? I do not expect to gain much support for my opinion, but I ask you to discuss it thoroughly and logically; it is this, that horses only "cut" when from illness, weakness, want of condition, or other circumstances they are unable to perfectly control the action of their limbs; that shoeing has nothing whatever to do with it; that the fact of a horse ceasing to cut after a change of shoes is simply a coincidence; that the statement that "some horses require one sort of alteration and some another, depending upon their action," is a gratuitous assumption, and directly opposed to our daily experience.

TO PREVENT CONCUSSION.

Horses do sometimes jar their limbs even to the extent of splitting a bone or spraining a muscle or ligament, but these accidents are always the result of a false step—*i.e.*, of a movement of the leg over which from some cause the regular co-ordination has become interrupted. When a horse makes a slip on some smooth surface he loses control of his action, and weight is applied to some structure—bone, muscle, or ligament—which at the time is in a position or condition unprepared for it. The consequence is injury. When a horse that has been some days in the stable comes out with more excitement and courage than sense he is liable to jar some structure, because his movements are not deliberate and controlled. Again, when a horse puts his foot on a surface differing in level from that surrounding it he suffers from concussion. Those of us who have walked over an unnoticed step, or who, coming down a stair, fancy they have reached the bottom when there is one more step, know quite well how concussion occurs, when the muscles of the leg and the position of the bones are not adapted to the level upon which the foot must rest.

All concussion of the limb that I know of is dependent upon the position of the bones and the action of the muscles. It cannot possibly be affected by the form of shoe or by anything applied to the foot, unless it be something which does harm by altering the proper relative position of the foot to the leg.

IN RELATION TO THE FOOT.

Surgical shoeing in relation to the foot is a subject for a volume, but as my object is not to be exhaustive, but only suggestive, I enter upon it with strong hopes that I shall not be wearisome.

Having just referred to concussion as it affects the leg of the horse, it may be convenient at once to say what I think about this cause of injury as it affects the foot.

The popular idea of concussion—that it is the inevitable result of "the 'ammer, 'ammer, 'ammer on the 'ard 'igh road," is not mine. I do not believe that hardness, *per se*, is an objectionable quality in roads. I do not believe that a soft road is any better than a hard one for a healthy horse's foot, and I am sure it is much worse for his muscles. I may be told that horses wear out more rapidly when worked on hard roads, and that their feet are the first part to show the result of work. I do not dispute the fact at all. I merely deny that it is due to the quality of road. I say it is the excessive work and bad shoeing to which they are subject that destroys them—that wears out fifty per cent. of horses before they reach maturity, and shortens the working life of all horses by three or four years.

Nature has provided in the foot and leg against all direct concussion. The foot has its hard tough wall and sole as its chief protection, then its elastic horny frog and the soft frog-pad, with the lateral cartilages and the obliquity of the pastern to still further guard against concussion. So long as these

maintain their integrity there is no jar. When, however, some disease or injury happens, then the foot is easily jarred. No part of the body suffers more acutely from any change of a painful nature, and therefore it is often necessary to guard against concussion when no very definite signs of disease are visible, but when the change of action indicates to the scientific observer that pain exists. I have no doubt whatever that the foot of the horse suffers all the little disturbances that affect the human nail, as well as the greater changes that even a novice cannot overlook. The milder degrees of pain accompanying the slighter changes are made evident by no sign, except defective action, and that varies in degree from "not going as free as usual" to "going decidedly short." Such is my explanation of what are called cases due to concussion. Not until disease exist does concussion apply. To prevent it we can do nothing which is not superfluous in a sound foot, but to modify it we may use indiarubber pads, or the steel-spring shoe on feet already injured. There are a number of definite conditions affecting the foot in which surgical shoeing is demanded, and I think only two principles are concerned in all—we either have to protect a part by covering it up, or relieve it from pressure by preventing contact with the shoe.

PROTECTION BY THE SHOE

is only necessary when the horny covering of a part is removed. When the sole has been punctured and horn has been removed to allow examination and treatment of the wound, then protection is necessary, and none is better than tow and tar retained by splints. In cases where it may not be necessary to occasionally remove the covering from the part, then leather attached with the shoe is best. Under no circumstances that I know of is it necessary to make the shoe wide, simply as a protection. Width as expressed by "plenty of cover" in a shoe is at no time necessary or expedient.

"Convex soles" are liable to injury by rough stones, and may require protection. This is best afforded by a leather sole, but as soon as sufficient thickness of horn has been allowed to grow, I think a shoe is more easily and exactly fitted without any leather. In these cases I do not believe in the protection afforded by a wide-webbed shoe. It is necessary to make the shoe of sufficient thickness to prevent direct contact between the sole and ground at each step, and a very narrow shoe, though it will do this, is not easily fitted or holed for nails. A medium width of shoe is best, and it must be carefully seated, so as not to cause any uneven pressure on the sole. It must also have a good bearing surface, so that weight, through the wall, rests evenly upon it. Very often we see shoes, for such feet, seated from the outer edge to the inner, so that the foot surface of the shoe presents an incline downwards to the centre—exactly like a saucer. Now, a shoe of this kind is an unmitigated evil, as the weight of the horse forces the foot down this incline, and pressure, or perhaps I should say compression, of the whole foot is the consequence.

RELIEF OF PRESSURE.

When some limited portion of the hoof is diseased or injured it is requisite to remove it from pressure by the shoe. In ordinary cases of broken hoof we have the simplest condition of this kind. As the result of a lost shoe we may have the horn at the quarters or toe broken away, so that any pressure on the part causes pain. The indication is to utilise those parts of the hoof that are soundest, and place upon them the extra bearing. In most cases I find that the heels are least injured, and if they will allow a stroke or two of the rasp their bearing surface is lengthened, and thus weight most judiciously distributed.

"SEEDY TOE"

requires no pressure on the affected part.

After a shoe is properly fitted—not attached—it will be easily seen what parts of the wall are to be eased. I make a practice of then cutting away about a third of an inch of the lower edge of the wall, so that a considerable space is left between the shoe and it. As the hoof grows it will be found that this space soon becomes less, and in a few weeks has disappeared. This is proof of a peculiar physiological fact—viz., that any portion of wall not having the same bearing as another grows faster, and consequently the time soon arrives when it takes a bearing on the shoe. This explains why it is not at all uncommon to have lameness recur if the removal of shoes be too long postponed. In "seedy toe," in fact in all conditions where the front part of the foot is tender, it is necessary to avoid raising the heels, as this throws weight forward and may cause lameness. In such cases, then, avoid calkins.

"SAND-CRACK"

When at the toe requires that the wall should not be in contact with the shoe on either side of the crack for at least an inch. We must, also, not put a clip over it, but we should have one at each side (not too close). We also remove the calkins of shoes and lower the heels. When the crack is at the quarter I have seen care taken not to have any bearing of the horn behind it upon the shoe. I think this is opposed to all reason. We know that the wall of the heels is sufficiently yielding to bend downwards when the weight of the horse is placed upon it. If you leave a space between the heel and the shoe for an inch and a half—a space into which you can place a small penholder—you will find that contact with the ground results in the horn being pressed down until it touches the shoe. Now, if we have a crack in the quarters every such movement tends to drag it open. The indication, to my mind, is to so fit a shoe as to prevent this up and down motion, to take a level bearing from toe to heel, but, before nailing the shoe on, to rasp away the lower edge of the wall at the sand-crack and for an inch each side of it.

Corns are simply bruises to the angle of the sensitive sole, caused by the heel of the shoe. By repeated bruising we have exostoses on the extreme angle of the coffin-bone, and hypertrophy of the soft tissues covering it. This condition is very easily irritated, and hence the saying, "Once a corn always a corn." It is not true. If a corn be at first properly treated, and time allowed, there is no liability to its recurrence. A good shoe for a corn is a three-quarter shoe. By it pressure is absolutely removed, and even the worst farrier can effect the alteration. Why it should be considered expedient to cut away the horn of a horse's foot when a little staining at the heel is found I do not know. We ought to be able, in most cases, to diagnose the existence of suppuration without seeing it. Of course if matter exist it is right to allow it to escape; but half the corns, even when lameness exists, have not reached the stage of suppuration, and if the pressure be relieved, never will. Cutting away all the horn at the heel, as is done by explorers for corns, leaves the wall without its proper internal support. The horny wall requisite for bearing becomes a narrow ridge, and when weight is placed upon it is forced either inwards or outwards, either movement causing pain and injuring the already inflamed structures within.

CONTRACTED FEET.

The surgical shoeing necessary for contracted feet is simply negative. You can do a lot of good by letting them alone. By using tips the hoof is protected from wear, and the back parts of the foot allowed free play. The

extra bearing on the heels and frogs increases their functional activity and promotes their development.

Some care is requisite in using tips not to destroy the proper relative proportions of the foot. If retained too long, the toe grows excessively long, and harm results. Tips, like shoes, should never be allowed to remain on horses' feet over a month. Quite as much harm may be done by allowing a horse's foot to become disproportionate from overgrowth as by too-frequent changes of shoes and ignorant removal of horn.

It has been attempted to mechanically force the expansion of a horse's foot by so fitting the shoe that the heels rested upon an inclined plane—not by the "saucer" shoe I referred to, but by a shoe exactly the opposite, the bearing surface being inclined outwards. This shoe certainly forced the heels apart, and—it lamed the horse. In horse-shoeing, as in other matters, main strength and stupidity are bad substitutes for patience and brains.

THE DISCUSSION.

Mr. GREAVES said the paper did not lack practical intelligence; it was brimful of common sense. On some points he did not agree with Mr. Hunting; this remark applied to the assertion that cutting was not due to shoeing. He could show Mr. Hunting numbers of horses that cut badly with one sort of shoe, and never cut at all with another sort. His experience had forced upon him the conviction that there was a good deal in shoeing. He had a number of horses at work in Manchester with patten shoes; in nearly every case they were horses with contracted tendons. And he had known a horse stand still and refuse to move when the shoe broke. Certain circumstances required one to be shod with thick toes and thin heels, and others with thin toes and thick heels. He urged the importance of preparing the foot in the process of shoeing, and leaving nature to pare the soles. Horses now soon recovered from pricking, from the fact that smooth clean nails were used.

Professor PRITCHARD paid a high compliment to the essayist on the quality of his paper. He fully agreed with Mr. Hunting's view, that it was not necessary for a V.S. to have a shoeing-forge. In many cases if a V.S. could do without one, if he would take his advice, he would never have one. He went on to speak of the value of a practical knowledge of the art of shoeing, which afforded an insight impossible to obtain otherwise. Although he agreed with a great portion of what Mr. Hunting had said, he disagreed with reference to capped elbows. It was impossible, he believed, to produce it by contact with the ground. He had taken a great deal of interest in this subject, and had come to the conclusion that either the inner heel of the shoe or the hard horn at that part of the foot was the cause in a very large proportion, if not in all cases, of capped elbows. That capped elbow might be increased by coming in contact with the ground he would agree, but in the first instance it was produced by an injury from the inner portion of the heel. He believed that some horses in whatever condition they were would cut their legs. He had a mare who would cut unless shod in the way he had laid down to the shoeing-smith. There was another mode of cutting he would call "overreach," which the essayist had not mentioned. That was cutting the elbows with the toe of the shoe. He had seen cases where horses would go better in shoes with what he might call a good deal of cover than without it. In cases of Laminitis he could fancy a broad shoe might be used with advantage. He was of opinion, however, that exercise and the broad shoe were most likely to be of real use if the disease were not in an advanced stage. Replying to Mr. Greaves, he knew of one instance where the pedal-bone was restored to its original position, and he had seen cases where the toe and the pedal-bone had descended considerably, and been got

back to nearly its original position, but the descent had not resulted from Laminitis.

Mr. GREAVES said he had always held strongly to the opinion that when a coffin had once descended it could not regain its position, but when he had been shown a horse which was sound, after suffering from Laminitis, and in which he was assured the coffin-bone had been seen through the sole, he changed his mind. In his own experience he had never seen a perfect recovery.

Mr. OLVER said he could call to mind cases where, irrespective of condition, horses cut with one class of shoe, and not with another. He could not agree with the essayist that only in cases of disease did concussion apply, and in support of this view he mentioned the case of a hunter of his own, which, after a high jump, had become lame, and would never, he feared, be sound again, simply, he believed, from concussion. He thoroughly condemned the practice of using calkins and toe-pieces.

Mr. STANLEY advocated the use of indiarubber pads where necessary, and expressed the belief that quite half the horses had to be specially shod against cutting, and would continue to cut, no matter what their condition, unless so shod.

Captain RUSSELL gave instances of stallions that had been perfectly cured of Laminitis, and thought that if the foot was got at before the bastard horn was set it might be rendered sound. He was not so sure if it got into a chronic hard condition that any good could be done with it. In canker he had found benefit from a flat shoe fitted with a movable iron plate. He used a rivet for Sand-crack in preference to any other method. He believed a good deal of cutting was caused by the early breaking-in of horses.

Mr. CARLESS said his experience went to show that cutting was often caused by the faulty adaptation of the first shoe, and it was most difficult to stop after it had begun. Shoeing with high heels he held to be most objectionable.

Mr. BRIGGS observed that, in his opinion, weight in a shoe was of some value—it prevented concussion. He instanced the Irish shoes, and said horses brought over from Ireland with heavy, clumsy shoes never went so well after they had been shod in England. Cutting, he believed, was due sometimes to shoeing. He deprecated the use in towns of leathers, which interfered with the firm fixing of the shoes, although he agreed that leather might be a protection on country roads.

Mr. HUNTING briefly replied. He regarded it as somewhat satisfactory to find he was not so singular as he fancied. He thought he differed very considerably from many, both with regard to healthy and surgical shoeing, but he found there was exceedingly little real difference between them. On the subject of cutting he purposely put it as strongly as possible, with the view of evoking discussion. It seemed to be generally acknowledged that condition had a great deal to do with cutting. There was no special principle whereby they stopped a horse from cutting. Twenty years ago the veterinary profession had no knowledge of shoeing; now, he was happy to say, it was otherwise, to the advantage both of the owner and the horses themselves.

On the motion of Professor PRITCHARD, seconded by Mr. GREAVES, hearty thanks were accorded to Mr. Hunting for his paper.

The next meeting was fixed to be held at Worcester.

The Chairman was cordially thanked for his services, and the company adjourned to dinner.

NATIONAL VETERINARY ASSOCIATION.

(*Continued from page* 225.)

In his paper on "Some Diseases of the Foot of the Horse," Professor SMITH described Navicular disease (Laminitis) and his operation for ossified cartilages, already fully alluded to by him in this Journal.

In opening the discussion, Mr. HUNTER dealt with some of the points in the physiology of the foot in the relations to Navicular disease; and with regard to the latter he was of opinion that concussion was the chief cause. He had successfully operated on horses, the operation being that known as the high one. He hoped Mr. Smith's operation for Laminitis would prove of service, and thought the incisions in the hoof would be better made with a knife than a saw, as they could see better how they should be cut. With regard to side-bones, he imagined the essayist's operation was the most likely and best means of relieving the horse, but it should not be practised until the side-bone was sufficiently formed.

Mr. MCGAVIN thought a great cause of Navicular disease was standing idle in the stable, and if horses were kept in loose-boxes and moderately fed, it would not occur. Concussion was not a principal cause. Neurotomy he approved of, and preferred the high operation. Overfeeding was a frequent cause of Laminitis, and then purgatives were useful, as well as exercise on a soft bed, with lowered heels and broad shoes, followed by blistering. For side-bones he was in favour of Mr. Smith's operation.

Mr. RUTHERFORD disputed Mr. Smith's views as to the expansion of the horse's foot. Navicular disease was mainly hereditary, and chiefly affected Western horses. In Laminitis, effusion chiefly occurred at the front of the foot, between the hoof and pedal bone, which became displaced through movement. He had obtained good results by Mr. Smith's operation for side-bone.

Mr. HUNTING said Mr. Smith's paper was a most important one. The hoof did not contract, and he was not certain that it expanded.

Professor WALLEY believed there was some expansion in the foot. In many cases of Navicular disease, congestion of the vessels in the bone was due to the position of the latter and also maltreatment of the feet. Many cases of so-called Navicular disease were cases of Rheumatism, and concussion had nothing to do with its production. External injury might produce it. Rest, hot water fomentations and physic, was the treatment. Frog setons were of great value. For Laminitis, he put the horse on a soft place, or in a flooded loose-box. There was only congestion in the early stage of the disease; inflammation ensued after three or four days. He did not bleed at the toe.

Mr. HUNTER thought Navicular disease was due to fast and inconstant work; if pressure were the cause it would occur in heavy horses also.

Mr. EDGAR was of opinion that concussion was the chief cause of Navicular disease. He recommended Urquhart's pads.

Prof. PENBERTHY insisted on hereditary influence in the production of Navicular disease, and with regard to the high operation of Neurotomy he did not agree with Professor Smith.

Mr. ROBINSON desired, through the President, to make known that he recommended Mr. Smith's operation, and he (the President) agreed with the latter in preferring the low to the high operation. Setoning the frog was not cruelty. Some cases of indigestion might give rise to Laminitis. He gave a dose of physic.

Prof. SMITH was still of opinion that the weight of the body was supported by the perforans tendon, and that compression as a cause of

Navicular disease was a fact. In operating he preferred the low operation.

A vote of thanks was unanimously awarded Professor Smith.

VETERINARY EDUCATION AND REQUIREMENTS.

Mr. E. FAULKNER, M.R.C.V.S. (Manchester), in the course of a paper on "Veterinary Education and Requirements," said the profession, like all human institutions, was not perfect; but considering the difficulties with which it had been surrounded and embarrassed, the wonder was that without pecuniary aid from the State it should have advanced to its present position. The desire to still further improve and progress with the age and times, in order to become more serviceable, was now and must always be uppermost in the minds of all those who wished to see the profession a useful factor in the national well-being. To this end the careful consideration of such an important matter as veterinary education and requirements at the present time by a representative gathering of the profession could not be otherwise than beneficial to all interests concerned. The various veterinary requirements might be broadly stated as the requirements of the veterinary aspirant in order to become a qualified and competent veterinary surgeon; the requirements of the Royal College of Veterinary Surgeons; and that which is required by the public from the profession. In the first division, briefly, amongst the things needful, was the possession of a good general scientific and practical education, combined with thorough acquaintance and capability in the duties and details of professional practice. In the second division the Royal College of Veterinary Surgeons required from its graduates that they should, upon examination, prove themselves fully qualified to practice the art and science of veterinary surgery and medicine. In the third, to serve the public well, required that a veterinary surgeon should fulfil all the functions that appertain to his calling in a sound, practical manner, based on scientific principles and truths. Veterinary education divided itself naturally into the general and the professional. General education should, in his opinion, be such as tended to the development of the youth's physical and mental capabilities, and was best suited to the requirements of the profession he intended to adopt. Matters extraneous and foreign should not be crammed into his scholastic course, to the exclusion of that which was essential; rather should they perfect what would be of service, and exclude such as was not in his special case likely to be of benefit. Professional education required to be thoroughly systematised and applied to professional requirements in order to be efficient, and ought to include a complete training of eye, hand, and brain, development of close observation, and the faculty of reflection, and also the necessary manual skill. Having obtained the diploma of membership of the Royal College of Veterinary Surgeons, it was very essential that further experience should be gained in general practice as assistants, and on no account was it desirable to commence practice before attaining the age of twenty-five years. Referring to the requirements of the public, he said members of the veterinary profession required to be just what the diploma of the Royal College of Veterinary Surgeons said they were, in order that public interests be well served. According to the scientific and practical ability, skill, and attention brought to bear on each case under all kinds of circumstances and its utility, be it advising, operating, or prescribing, so would be the degree of esteem and confidence in which the profession would be held by the public.

Mr. WM. HUNTING (Newcastle) opened the discussion on the subject. He said first they should consider what the public required of them, and then they should try to supply the want, or nearly so. He favoured the employ-

ment of specialists as teachers. The pupil required brains, and then he had to work.

Mr. H. KIDD (Hungerford, Bucks) thought it would be an immense educational advantage to have a course of hygiene.

Professor Walley (Edinburgh), Mr. G. G. Mayor (Kirkham, near Preston), and Mr. J. B. Wolstenholme (Manchester) also spoke upon the subject.

Mr. FAULKNER, in responding, said he agreed with Mr. Hunting that there should be specialists as teachers ; but he held that the specialists should come from within the profession, and not from without. As to higher education, he felt that progress must be slow in that direction.

This discussion was closed by a vote of thanks to Mr. Faulkner; and votes of thanks to the President, the Provincial Committee, and local and general secretaries, terminated the meeting.

BOMBAY VETERINARY COLLEGE.

THE following is the Government resolution on the annual report of the Bombay Veterinary College :—

Resolution.—In submitting his annual report upon the working of the Bombay Veterinary College for the year ending on the 31st of March last (to which is appended a copy of report made to the secretary of the Society for the Prevention of Cruelty to Animals concerning the operations conducted in the Bai Sakarbai Dinsha Petit Hospital for Animals for the calendar year 1887), Mr. Steel, the superintendent, deals with a large number of questions, several of which are under the separate consideration of Government, and do not therefore call for special remark in the present review, which will be confined to an examination of the results of the legitimate work of the college during the year.

2. Last year's report dealt with a period of eight months only, during which the institution had been open. The present, therefore, is the first report actually embracing the facts and figures of a full year. At its commencement the number of students attending the classes was sixty-four, while at its close it had risen to eighty. The first examination was held in April, 1887, at which forty-three candidates appeared for their first professional examination, of whom thirty-four were successful. No students were as yet qualified for appearance for the second or higher standard. A supplementary examination was, however, with the approval of Government, held in September, at which two hospital assistants from Central India were permitted as a special case to appear for the second examination, without having gone through the usual curriculum, whilst seventeen candidates presented themselves for the first examination. The two hospital assistants passed, as also did eight of the latter. There were, therefore, at the close of the year undergoing instruction two seniors who had passed the second examination ; forty intermediates, who had passed only the first examination ; and thirty-eight juniors, who had as yet appeared for none except that required on entrance. The practice of having supplementary examinations is open to serious objections, as pointed out by the superintendent, and should only be resorted to in cases of peculiar necessity, which are unlikely often to occur. The question of the appointment of a permanent Board of Examiners is under the separate consideration of Government, and orders thereupon will shortly be issued.

3. It is gratifying to learn that the progress made by the free Government and municipal students, as a rule, fully justifies their selection. Of these there are apparently fifteen, as shown in Appendix B to the report, a figure which does not, however, tally with the details in Appendix A, in which sixteen such

students are entered. The tendency of the Native States of the presidency to avail themselves of the education given at the college is worthy of notice. There are in the institution twenty-one students sent from foreign territory, the chiefs of Sangli, Bhownugger, and Gondal having to be added this year to the list of those who have taken action in the matter. Appendix A shows one student as "Private free," a classification which is not understood, unless it refers to holder of the "*Steel Free* Studentship" mentioned in paragraph 20 of the report.

4. Mr. Steel suggests in paragraph 8 of his report that an instalment of the first half-year's fees might be required from each candidate for the entrance examination, by way of fine upon such as appear without any intention of pursuing their studies after passing. Government would be glad to receive the opinion of the college committee on this proposal.

5. The resignation of the Farrier-Major at the commencement of the year and the delay in the appointment of his successor have been unfortunate, though unavoidable. The question of the means of supplying a suitable man to fill the post is now under consideration, and meanwhile a native farrier is employed as a temporary measure.

6. His Excellency the Governor in Council trusts that the decrease in the attendance of the committee at their meetings is not caused by any falling off in interest in the management of the important institution under their control. No doubt, their work in organisation has been mainly accomplished, and much work of a purely routine nature can easily be managed by the circulation of papers; but the advantages which must result from the personal intercourse of the members of the committee for the discussion of points connected with the welfare of the college are so obvious that Government trust that it may be found feasible to hold a greater number of meetings in future years.

7. During the year a practical examination shed was constructed, and a commencement made of a chemical laboratory; the equipment of the dissecting-room and forge has been considerably improved, while numerous additions have been made to the museum and library. The grounds around the buildings have also been put in better order, and designs for quarters for resident students have been drawn up and submitted to Government.

8. Mr. Steel touches in his 18th paragraph upon "the measures best calculated to secure employment for the veterinary graduates." The subject is a large one, and cannot be satisfactorily dealt with in an annual report. It is, moreover, already under consideration, and comment thereupon may be conveniently postponed until the question is ripe for disposal.

9. The duties connected with the repression of cattle disease were again during the year carried on from the college, and visits of inspection were paid by Mr. Steel, his assistants, and in one case by two students, to Ratnagherry, Broach, Bijapur, Ahmedabad, the Panch Mahals, and Sholapur. The results are said to have been satisfactory; but as they have been made the subject of special report to Government, and are under consideration in connection with the whole question of the prevention of disease among cattle, it is unnecessary to allude further to them in this place.

10. Conformably with the wishes of Government, expressed in their resolution reviewing his report last year, Mr. Steel has submitted a statement of account (Appendix E), giving the receipts and expenditure (excluding building charges and examiners' fees) for the past year. The former are put down at Rs. 5,130 (Rs. 2,630 from fees, and Rs. 2,500 from the municipal grant), and the latter at Rs. 20,277. It does not appear, however, upon what grounds the grade pay of the two assistant surgeons, lent to the college as lecturers, which amounts to Rs. 3,000 per annum, has been omitted from the debit side of the account. Nor is it clear whether the fees credited were all

recovered within the financial year. The financial statement has, indeed, not been prepared with sufficient clearness, and the committee should be asked to prescribe a form of balance-sheet which will convey the necessary information in a succinct form without obscurities. Regarding the arrears of fees, which are an unsatisfactory feature of the accounts, it is not clear whether any portion of them is due from those still under education, or whether all the defaulters have left. In the former case their recovery shoud admit of no difficulty, and ought not to be delayed. The attention of the managing committee should be called to this point, which is well worthy their consideration.

11. The connection of Government with the Animal Hospital is only indirect, and in so far as it provides material for clinical instruction to the students of the college. It is unnecessary to comment upon the report of its working for the year further than to observe that it appears to be securing increased popularity, and, it may be hoped, is giving material aid to the Society for the Prevention of Cruelty to Animals, by showing the advantage of proper treatment, and discrediting the irrational and often inhumane methods so largely prevailing.

12. Mr. Steel's reports give evidence of sustained interest and zeal in the conduct of his duties, and the development of veterinary education and practice, from which much future public benefit may be anticipated.

THE VETERINARY DEPARTMENT OF THE UNIVERSITY OF PENNSYLVANIA.

Professor Osler, of the Pennsylvania University, gives the following sketch of the Veterinary school annexed to that seat of learning, with the view of showing its capabilities and prospects.

"The authorities of the University of Pennsylvania undertook an ambitious experiment, when, four years ago, they founded the Veterinary Department. The plan was deliberately laid some time before, and as the proper person to undertake it did not appear to be available, Dr. Rush Shippen Huidekoper, one of the Demonstrators of Surgery in the Medical Faculty, a man of recognised energy and capacity, was asked to go abroad and in the best European schools qualify himself for the task. On his return, in 1883, the scheme was matured, and in October, 1884, the school was opened with twenty-nine matriculates.

"The intention from the outset was to furnish an education in veterinary medicine on advanced lines, and the curriculum of study was modelled on the basis of the French and German schools, with a preliminary examination and a graded course of studies extending over three years, with sessions of nine months' duration. During the first year instruction was given only in the elementary branches, and it was not until the session of 1885-86 that the infirmary buildings were completed. The course of study is most extensive and thorough, and, with the exception of Harvard, longer than in any medical school in the country. In the first year the subjects studied are chemistry, materia medica and pharmacy, histology, botany, zoology, veterinary anatomy and forging. A very special advantage in this session is the courses which the students take in botany and zoölogy at the Biological Department. I feel convinced, from my Montreal experience, that this is a most beneficial plan for veterinary students, as it not only extends their knowledge, but tends greatly to heighten their appreciation of the scientific aspects of the profession.

"In the second year the subjects taught are medical chemistry, physiology, therapeutics, general pathology and morbid anatomy, veterinary anatomy,

zoology, surgical pathology and internal pathology, and the contagious diseases. The general pathology and chemistry are taken at the medical school, where the students have the advantage of the extensive chemical laboratories.

"In the third year the subjects of the curriculum are therapeutics, general pathology and morbid anatomy, surgical pathology and operative surgery, internal pathology and the contagious diseases, sanitary police, obstetrics, and zoötechnics. In the second year the student attends clinics, while in the third year he is placed in charge of sick animals, prepares the clinical reports and makes autopsies.

"The teaching facilities of this school are exceptionally good, equal to many of the European, and superior to most veterinary colleges of this country. The explanation is simple—more money has been spent. The situation has been most fortunately chosen, and when the projected botanical garden is arranged, the place will rival in beauty of surroundings the Berlin school. The Infirmary stables are commodious and well arranged, and there is a separate department for irrigation and baths. The dog kennels are large and roomy, and a distant portion of the building has been assigned for an experimental station. One of the special features of the school is the farriery—a cut of which is given—in which the student has to learn practically all the details of normal and pathological shoeing. The dissecting room, the histological, physiological and pharmaceutical laboratories are arranged on the most modern plans, and by the exertion of Dr. Huidekoper the museum is annually enriched by valuable specimens, particularly in comparative osteology.

"After an existence of four sessions, we should be able to form some idea of the prospects of the school. Naturally, with strict requirements and a prolonged course, a large number of students could not be expected; but in the session of 1886-87 there were forty-nine in attendance, and the first graduating class contained eleven men. In the session just completed the number was fifty-six, and there were thirteen graduates. The chief difficulty in maintaining a high grade school is the heavy expense entailed in the costly laboratory and hospital equipments. The income derived from the students, necessarily limited in number, is insufficient for maintenance, and endowment is absolutely necessary. The State may be looked to for material assistance, as the very existence of such a school in our midst is of the greatest possible benefit to the agriculturist; but in the future, as in the past, it is to generous citizens, like the late Mr. J. B. Lippincott, that the school must look for endowments. The practical success so far attained has been due to the unceasing exertion of Dr. Huidekoper, who has devoted himself early and late to the interests of the school. The University has indeed been fortunate in securing a man to organise the department who has high aims, a proper conception of the dignity of his profession, and, above all, a due appreciation of the fact that education in any line of life, to be worthy of the name, must be thorough."

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

A GENERAL meeting of the members of the above Society was held at the Blackfriars Hotel, Manchester, on September 9th, the PRESIDENT (P. Taylor, Esq.) in the chair, among those present at the meeting being Messrs. T. Greaves, T. Hopkins, W. Whittle, S. Locke, T. Briggs, W. A. Taylor, J. B. Wolstenholme, and the Secretary.

Letters of apology for non-attendance were received from Messrs. E. Faulkner, Prof. Walley, R. S. Reynolds, and A. Gibson.

The minutes of the last general meeting having been read and confirmed, as well as those of the various Council meetings,

The PRESIDENT addressed those present on the benefits to be derived from becoming a member of the Society, and illustrated his remarks by reference to various important actions that had been brought against members since the last meeting. He also referred in very feeling terms to the death of several members of the Society, some of them having been members of the Council.

The SECRETARY and TREASURER then read their reports, from which it appeared that there had been a falling off in membership from deaths and neglect in members paying their subscriptions.

Meetings had been held in Manchester, Liverpool, Birmingham, Edinburgh, and London. Many Council meetings had also been held, and hundreds of miles travelled by the officers of the Society and several members of the Council, entirely at their own cost, printing, postages, and the hire of rooms being the only items charged to the funds; while they have expended on fifteen actions brought against members a sum of £325, and on the widows and orphans of deceased members a sum of £220. In many cases, the Council have had to refuse assistance to widows and orphans, from the fact that their husbands were not members; the Council regretted this very much but the rules left them no option. The present funds amount to £2,724, and new members and their families are entitled to the same privileges as those who joined the Society twenty-three years ago, when the subscription annually was double the amount, and the funds in hand *nil.*

The following were elected officers and Council: P. Taylor (President); R. S. Reynolds (Vice-President); Thos. Greaves (Treasurer); Geo. Morgan (Hon. Sec.); T. Briggs, J. S. Carter, T. Hopkins, J. Lawson, S. Locke, R. C. Trigger, W. A. Taylor, W. G. Schofield, Wm. Whittle, Prof. Walley, Prof. Williams, and W. Woods.

Mr. S. LOCKE gave notice of his intention to alter Rule 2, regarding entrance fee and subscription.

A unanimous vote of thanks was passed to the members of the Scottish Metropolitan Society for their contribution of twenty pounds to the funds.

A hearty vote of thanks to the PRESIDENT for his services in the chair terminated the proceedings. GEORGE MORGAN, *Hon. Sec.*

Obituary.

Mr. F. T. Welham, M.R.C.V.S., of Brentwood, died under melancholy circumstances on September 22nd. It appears that he returned home about midday, after attending some cases, and being unwell, he went to bed, and endeavoured to get to sleep. Failing in this, he drank some chloral, for the purpose, it is supposed, of inducing sleep; but he took an overdose. He at once discovered his error, and calling to his wife, told her he had poisoned himself, and asked for some oil and water. She immediately administered some oil, but it was unavailing, and before medical assistance could arrive death ensued. Mr. Welham was forty-one years of age, and leaves a family of six children. He graduated in 1867, and was for some time an Inspector under the Privy Council in Ireland.

Another painful case of death of a member of the profession occurred also in September. Mr. B. R. Kirk, M.R.C.V.S., Huddersfield, was found dead in

his bedroom, death being due to accidental burning while no help was at hand.

The following deaths have also been reported: E. J. Browne, M.R.C.V.S., Brighton, who graduated in 1850; J. W. Canty, M.R.C.V.S., Listowel, who graduated in 1880; R. Bareham, M.R.C.V.S., Faston, who graduated in 1843; J. White, M.R.C.V.S., Chirnside, who graduated in 1835; S. W. Slattery, M.R.C.V.S., St. Louis, U.S.A., who graduated in 1877.

In our last issue we referred to the melancholy death of Mr. Graham Mitchell, F.R.C V.S., of Victoria, Australia, and since then we have received from the colony abundant evidence of the esteem in which he was held and the regret his untimely death has occasioned. At a meeting of the Council of the National Agricultural Society of Victoria, held on June 15th, Mr. McGregor "drew the attention of the meeting to the death of Mr. Graham Mitchell, F.R C.V.S., the Honorary Veterinary Surgeon of the Society. He moved that the regret of the Council be recorded in the minutes at the loss sustained through the death of their honorary officer. Seconded by Mr. Lobb, who stated that from a long acquaintance with the deceased he had pleasure in bearing testimony to his being one of the very best-hearted of men. Carried." And in the Journal of the same Society there appears the following sympathetic notice: "It is with sincere regret that we chronicle the sudden and unexpected death of Mr. Graham Mitchell, F.R.C.V.S., Honorary Veterinary Surgeon of the National Agricultural Society of Victoria, which occurred on the night of the 4th June, from Heart Disease. Mr. Mitchell was the son of a Presbyterian clergyman, and was educated in Edinburgh, being a pupil of the celebrated Professor Dick, at whose college (the Royal) he obtained his diploma. He came to the colony in 1855, and settled down at Kalkallo, whence he removed to Kirk's Bazaar, Melbourne. He experimented successfully with inoculation for Pleuro-pneumonia in cattle, and subsequently went to India for three years, under a professional engagement. Here he became acquainted with Mr. Rutherford, the veterinary surgeon who came down with Mr. Mitchell from India and investigated his system of inoculation, which he (Mr. Rutherford) afterwards practised with great success in the dairy herds in Glasgow. In connection with the Cumberland Disease, Foot-and-mouth Disease, etc., Mr. Mitchell was very widely known. He also successfully cultivated vaccine lymph, and vaccinated children directly from the calf. His system was pronounced a great success by the Hon. Graham Berry, then Chief Secretary, and a number of leading medical gentlemen who visited his depôt at the Royal Park by invitation and saw the vesicles on the calves, as well as on the arms of the children who had been previously vaccinated direct from the calves. In 1882 Mr. Mitchell established the *Australian Veterinary Journal*, of which he was editor. He also contributed largely to the general literature of veterinary science, and occasionally wrote for the veterinary column of this journal, while two days before his death he read a paper on 'Stringhalt in Horses,' before the West Bourke Agricultural Society. Mr. Mitchell was a man of splendid courage and daring originality, and was also remarkably well informed; for he possessed an excellent library, to which he constantly added the newest works, and he subscribed to the leading veterinary journals of Great Britain and America, and spared no expense in obtaining the latest veterinary instruments and appliances; so that he was a perfect mine of valuable information, and unlike many babblers who prate twaddle, could always give an intelligent and intelligible reason for the opinions he expressed. By his death the colony, and, indeed, the world, loses an undoubtedly able man—one whose ability, like that of many other fearless and original men, his contemporaries really fail to fully recognise and justly appreciate."

Army Veterinary Department.

Gazette, September 4th.

21ST HUSSARS.—Veterinary Surgeon John Robert Beech, C.M.G., to be Second Lieutenant, in succession to Lieutenant H. C. Higgs, promoted; Second Lieutenant John Robert Beech, C.M.G., is seconded for service with the Egyptian army.

We would direct attention to this most unusual notification in the *Gazette*. Up to the date of its appearance there was only one instance on record of a Non-Combatant receiving a Commission as a Combatant Officer, and that was when Assistant-Surgeon H. Wilkin, of the 11th Hussars, received a Cornetcy in that regiment for rescuing H.R.H. the Duke of Cambridge from capture by the Russians at the Battle of Inkerman, in the Crimea, in 1854.

There is no provision in the Royal Warrant for such transfer, and since 1854 there has been no occasion to invoke the Queen's prerogative in such a case. On representation being made to the Horse Guards of the desire of Mr. Beech to receive a Commission in a cavalry regiment, the Commander-in-Chief, ever ready to consider the claims of officers of the Veterinary Department, recommended to the Secretary of State for War that such Commission be awarded Mr. Beech, in acknowledgment of his meritorious services with the Egyptian Expedition of 1882-84, and Soudan Expedition of 1884-85, but more especially of the prominent part he took in Portal's Mission to the King of Abyssinia recently, together with the high testimony he received from the Sirdar of the Egyptian Army as to his excellent qualities as an officer. The occurrence reflects great honour on Mr. Beech, no less than on the veterinary officers of the army, who, in regretting the loss of a colleague who has so well played his part in the profession, must wish him still more success in the new sphere to which his good fortune has carried him. This is another instance of the rapid progress the Department has deservedly made in the estimation of the Military Authorities, and is a further proof that no obstacle now exists to veterinary officers receiving adequate consideration and reward equally with other officers.

The extraordinary event has caused much comment in military circles, and service papers have, of course, noticed it. The *United Service Gazette* of September 8th says: "The appointment of Veterinary Surgeon J. R. Beech, C.M.G., from the Veterinary Department to a second lieutenancy in the 21st Hussars, is a transfer of an unusual character, and although a great loss to the department in which this officer has for some time served with conspicuous ability, it will be a decided gain to the cavalry."

Veterinary Surgeons Crow, Hagger, and S. M. Smith have sailed for a tour of service in India, and Messrs. Gladstone and Betser are under orders to embark for that country. Mr. Braddell has returned from a tour of service in India, and is attached to the 11th Hussars in Dublin.

Mr. Steel, who came home on sick leave, has made so little progress towards recovery from his illness (abscess in the liver), that it is probable he will require an extension of leave.

Veterinary Surgeon R. W. Burke has successfully passed an examination in the Higher Standard of Hindustani.

Notes and News.

EQUINIA IN SWITZERLAND.—A correspondent of *The Lancet* writes from Geneva:—"The rural district of Vandœuvres has been thrown into consternation by cases of Glanders (*morve chevaline*, as the local physicians call it) in the human subject, two of them having already terminated fatally.

The facts are these. A prominent landed proprietor had, a year or two ago, purchased a horse which, to all appearance, was sound in wind and limb, and up to within the last few weeks betrayed no sign of any malady. In June, however, one of the grooms (Bouvier by name) was taken ill, and had to go to the hospital, where he was pronounced to be suffering from severe whitlow. Instead of getting well, he rapidly became worse; but, probably from his exceptionally good constitution, he is regarded as not unlikely to recover. His successor (one Dupuis) was little more than a fortnight in service when he too sickened, and, after fourteen days' acute suffering, died. By this time suspicion was aroused as to the horse—the general opinion being that it was glandered. Presently Dupuis' father, who, from occasionaly helping in the stables, took his son's place, became ill also. The physician, who had been struck with the unusual symptoms in Dupuis *fils*, as to which he could not make up his mind, on recognising the same presenting themselves in the father, called in two colleagues in consultation. The opinion arrived at was that father as well as son had contracted the contagion of *morve chevaline* in its most malignant and rarely curable form; and, indeed, Dupuis *père* soon succumbed, after some days of great suffering. Bouvier, the first attacked, still struggles with the malady, but, as already said, is considered as in a not quite hopeless condition. At the instance of its owner the horse was slaughtered, and the *post-mortem* examination placed the fact of its suffering from Glanders beyond doubt. What adds to the popular alarm is the existence of the same symptoms, though of a less pronounced kind, in other horses of the neighbourhood."

Actinomycosis in Man.—M. Nocard recently reported to the Académie de Médecine a case of Actinomycosis, which is the first in which this disease has been observed in the human subject in France. The patient was a stable boy in whom, after certain injuries to the left buttock and thigh in the spring of 1887, what seemed to be deep-seated chronic abscess developed in the limb. This was opened in July, but other abscesses appeared in October and November. The pus contained a considerable number of small white bodies which, on microscopic examination, were found to be masses of actinomyces. In July, 1888, there was still an obstinate fistula which from time to time became inflamed and discharged pus presenting the characteristics already described. The patient is now able to walk, and his general health is better than it was, but he is not cured.

The Bacillus of Glanders.—At a recent meeting of the Academy of Medicine, Prof. Babès, of the Faculty of Medicine of Bucharest, communicated the result of his researches on Glanders, an affection rather common in Roumania in man as well as in the horse. He had an opportunity of examining three persons, who had died with all the symptoms characteristic of this malady. The infection was the result of their contact with horses affected with Glanders. At the necropsy, masses of bacilli were found in the blood. He also observed, by the aid of numerous experiments, that the bacillus of Glanders may penetrate into the skin, without any solution of continuity in the latter, in following the hairy follicles where it multiplies. It then traverses the epithelial cells and produces infiltrations of the embryonic cells under the form of patches and of papulæ, which constitute the origin of ulcerations of the skin.

Tobacco Smoking.—Opponents of tobacco in Paris point with great satisfaction to M. Chevreul, whose 102nd anniversary is celebrated to-day, as a non-smoker. The same people also put forth another non-smoking centenarian of France—M. Renaudin—who is 104 years old, was present at the battle of Waterloo, reads and writes without spectacles, is not hard of hearing, and

is, in fact, according to the anti-tobacco leaguers, a perfect ancient phenomenon possessing all his faculties intact. M. Renaudin lives at Ville-Evrard, and was a veterinary surgeon by profession

PROLONGED STARVATION.—A pony, the property of a man named Bowden, of Mold, was recently lost, all search proving fruitless. After the lapse of some days it was suggested that a culvert which conveys water from an adjoining colliery should be searched. This was done, and there the pony was found up to his belly in mud and water. He had spent eleven days without food in the foul air of this channel. The culvert was too narrow to allow of the creature being turned, and men had to dig down for several feet to rescue it.

THE EFFECTS OF EARTHQUAKES ON THE LOWER ANIMALS.—In the last issue of the "Transactions of the Seismological Society of Japan," Professor Milne, the well-known student of volcanic phenomena, discusses the effects of earthquakes on animals. The records of most great earthquakes refer to the consternation of dogs, horses, cattle, and other domestic animals. Fish also are frequently affected. In the London earthquake of 1749 roach and other fish in a canal showed evident signs of confusion and fright; and sometimes after an earthquake fish rise to the surface dead and dying. During the Tokio earthquake of 1880 cats inside a house ran about trying to escape, foxes barked, and horses tried to kick down the boards confining them to their stables. There can, therefore, be no doubt that animals know something unusual and terrifying is taking place. More interesting than these are the observations showing that animals are agitated just before an earthquake. Ponies have been known to prance about their stalls, pheasants to scream, and frogs to cease croaking suddenly a little time before a shock, as if aware of its coming. The Japanese say that moles show their agitation by burrowing. Geese, pigs, and dogs appear more sensitive in this respect than other animals. After the great Calabrian earthquake it is said that the neighing of a horse, the braying of an ass, or the cackle of a goose was sufficient to cause the inhabitants to fly from their houses in expectation of a shock. Many birds are said to show their uneasiness before an earthquake by hiding their heads under their wings and behaving in an unusual manner. At the time of the Calabrian shock little fish like sand-eels *(cirricelli)*, which are usually buried in the sand, came to the top and were caught in multitudes. In South America certain quadrupeds, such as dogs, cats, and jerboas, are believed by the people to give warning of coming danger by their restlessness; sometimes immense flocks of sea-birds fly inland before an earthquake, as if alarmed by the commencement of some sub-oceanic disturbance. Before the shock of 1835 in Chili all the dogs are said to have escaped from the city of Talcahuano. The explanation offered by Professor Milne of this apparent prescience is that some animals are sensitive to the small tremors which precede nearly all earthquakes. He has himself felt them some seconds before the actual earthquake came. The alarm of intelligent animals would then be the result of their own experience, which has taught them that small tremors are premonitory of movements more alarming. Signs of alarm days before an earthquake are probably accidental; but sometimes in volcanic districts gases have emanated from the ground prior to earthquakes and have poisoned animals. In one case large numbers of fish were killed in this way in the Tiber, and at Follonica, on the morning of the 6th of April, 1874, "the streets and roads were covered with dead rats and mice. In fact, it seemed as if it had rained rats. The only explanation of the phenomena was that these animals had been destroyed by emanations of carbon dioxide."

PROTECTIVE INOCULATION AGAINST ASIATIC CHOLERA.—At a meeting of the Paris Académie de Médecine on August 21st, M. Pasteur presented an important

communication from Dr. N. Gamaleia, of Odessa, in which that gentleman claimed to have discovered a method of preventive vaccination for Cholera. He began by pointing out that although ordinary cultures of the cholera microbe were so slightly virulent that Koch believed Cholera was not inoculable in the lower animals, it was possible to intensify its virulence to an extreme degree by conveying it to pigeons after it had passed through the guinea-pig. It produced in the former a fatal form of "dry" Cholera, with exfoliation of the intestinal epithelium. The microbe was found in the blood of pigeons which had died of the disease so induced. After passing through several pigeons the microbe acquired such virulence that one or two drops of the blood of an inoculated bird sufficed to kill healthy birds in from eight to twelve hours, whilst an even smaller dose proved fatal to guinea-pigs. If the virus obtained after passing through pigeons is cultivated in nutrient broth, and is afterwards exposed to a temperature of 120° C. for twenty minutes, it will be found that there is left in the sterilised culture a toxic substance which produces characteristic phenomena in animals. If four cubic centimètres of the sterilised broth be injected into a guinea-pig, the animal's temperature gradually falls, and death takes place in from twenty to twenty-four hours. Pigeons die in the same way, but require a larger quantity, namely, twelve cubic centimètres injected in one dose. On the other hand, if the same quantity of the sterilised fluid is injected, but in two or more doses given at intervals of a day or two, they do not die, but are found to have become refractory to Cholera to such an extent that even half a cubic centimètre of the most intense virus (the blood of an inoculated pigeon) is not fatal to them. Guinea-pigs are still more easily vaccinated by injecting the sterilised broth in doses of two cubic centimètres once or twice repeated. Dr. Gamaleia has found this *chemical* vaccine of unfailing efficiency and perfectly innocuous. He admits that he derived the idea of it from a paper of M. Pasteur's on the chemical vaccine of Rabies, and from Dr. Roux's experiments on Septicæmia. He offers to repeat the experiments in M. Pasteur's laboratory, in presence of a committee of the Académie des Sciences. He further vulunteers to test the method on himself in order to determine the question of its applicability to man and the dose of the vaccine required, and states that he is prepared to undertake a journey to the countries where Cholera prevails with the view of proving the value of his discovery. M. Pasteur, after reading the communication, said he would be glad to place his laboratory at the disposal of Dr. Gamaleia, who had already worked therein on more than one occasion. In 1886 he had been sent to Paris by the Odessa municipality to study the method of preventive inoculations for Hydrophobia, which he had since applied with great success in his native country.

Dogs in London.—During the month of August 1,296 stray dogs were taken to the Dogs' Home, Battersea, by the Metropolitan Police, twenty-four mad or ferocious dogs were killed in the streets by the police, and five by private persons. Four other dogs were certified as suffering from Rabies, and ten from Epilepsy. The number of persons known to have been bitten by dogs was 150, including four constables.

Veterinary Medicine in Japan.—A writer in the *Japan Gazette* draws attention to the lamentably slow progress made in the Land of the Morning Sun, as the Japanese are pleased to designate their country; and among other instances he mentions that in the capital, Tokio, "There is not a single veterinary surgeon and in Japan about £6,000 of horse-flesh is ruined every year for want of the most ordinary care and attention, and twenty per cent. per annum in usefulness taken out of the remainder. There is room for fifteen or twenty good veterinary surgeons in Tokio alone."

PASTEUR'S TREATMENT.—During the month of May, 161 persons were treated at the Pasteur Institute. Out of this number forty-five were bitten by animals in which the existence of Rabies was proved experimentally; ninety-seven were bitten by animals certified to be rabid by veterinary surgeons, and fourteen were bitten by animals suspected to be suffering from Rabies. Out of this number two died. In both the fatal cases the bites involved the face, and were very severe. They came under treatment the second and fifth day respectively.

RABIES IN IRELAND.—An alarming outbreak of Rabies is reported from County Meath, which has led to the postponement of cob-hunting and the destruction of many dogs. Several people have been bitten, and some of them have been sent to M. Pasteur for protective treatment.

CONTAGIOUS DISEASES IN EGYPT.—The first authentic case of Rabies occurred in Egypt in August, 1886, and in the following January a second case was found in an English dog in Cairo; while in June, 1887, a third case was reported from a village near Cairo, the dog having bitten eleven individuals, three of whom are said to have died of Hydrophobia. This small record of Rabies is very satisfactory, when it is remembered that Egypt contains thousands of dogs in a half savage condition. During the past year there were eighteen cases reported, and probably others unreported, of Glanders and Farcy, but none communicated to man. Pleuro-pneumonia occurred among buffaloes and bullocks in three different provinces, but was easily checked by the sanitary measures adopted.

TEXAS FEVER.—Losses by Texas fever are reported from Parsons, Kansas, as follows: "The dreaded Spanish cattle fever has broken out among the cattle in the southern part of this county, and fears are entertained that many herds have been inoculated. About two weeks ago H. Milliken and W. M. Willey, farmers living near Valleda, discovered the disease among their herds, then in the Indian Territory. Thinking a change of location would stop the ravages of the disease, they drove their cattle to their home farms. Since their removal Milliken has lost forty-five and Willey nineteen head, with many more showing signs of the disease and dying. The state authorities have been notified of the situation, but they have done nothing."

VEGETABLE PATHOLOGY.—A laboratory of vegetable pathology for the study of the diseases of plants and the means of remedying or preventing them has recently been established in connection with the French Institut National Agronomique. This is certainly a step in the right direction, and one that might with much advantage be imitated elsewhere. Pathology will never be truly scientific till it is made to include the whole of organic life.

Correspondence.

THE VETERINARY SURGEONS ACT OF 1881.

DEAR SIR,—Few members of the profession will, I think, question the ultimate benefits to be derived from the above Act, although most of us, I doubt not, fail to discover much (if any) immediate advantage.

As you observe in the August number of the Journal: "There is no law to prevent any one practising who is not in the Register of Veterinary Surgeons, so long as he does not designate himself by a title which might lead

the public to infer that he is registered, but he cannot recover fees in a court of law"—that is to say, anybody may practise veterinary surgery if he can only make it worth his while to do so; and the fact remains that any persons, qualified or not, may castrate colts, cut pigs, "dock" horses, and "crop" dogs' ears, etc., etc., with impunity, so long as the public employ them to do it.

To protect our profession, we require to first make its members thoroughly acquainted with all the details of the *legitimate* science and art of the profession, and to educate the public to acknowledge and be *satisfied* with them. Until the latter is attained, however, I am persuaded that our members require to know, in addition to the above (I am even tempted to say *only*) the *illegitimate* practices of the art, and not be ashamed to perform them, for until the public are educated beyond their present standard respecting the duties of the veterinary surgeon, I am afraid, Act or no Act, "quacks" will exist. The problem to solve, then, is, How can we educate the public? I will leave this to you, and suggest that steps should be taken to prevent those on the register from placing themselves *falsely* before the public, and *as far as possible* prevent those not on the register from practising veterinary surgery altogether. The latter appears difficult, since an owner of animals may employ whomsoever he will to attend his stock, and the only way, in my opinion, that we can get rid of this is to show them that the qualified veterinarian's services are *pecuniarily* more to his advantage than are those of the "quacks," since my experience leads me to think this is the method by which such persons can gauge our ability and usefulness. The former is, however, I think, within our grasp, if we could only organise a body of representatives who would be willing, capable, and bold enough to undertake the task if we found the "needful" £ s. d. We can, as Mr. Dyer says, "hardly expect individual members of the College to take upon themselves the onus of prosecuting such individuals." Neither do I think we can expect the funds of the R.C.V.S. to defray the expenses, and possibly it is asking too much of our hard-worked representatives, who have —judging from *last* year's work—shown themselves to be about as weak a set of men as we could possibly select, to take up such disagreeable, although necessary labour.

Personally, I consider there should be a special committee to consider each case on its merits as submitted to them, and settle whether it is advisable or not to enter "an action," and if so, a fund—say collected by an annual subscription, or voluntarily if you like—placed at their disposal to defray any expenses.

I shall be pleased to subscribe my share, and render any assistance I can to the formation of such a committee, if the profession consider it worth considering. I should be glad to hear the opinions of other members of the R.C.V.S., either by personal communication or through the VETERINARY JOURNAL.

GEO. A. BANHAM.

Downing Street, Cambridge.

SIR,—We have read much of late about the inactivity of the Council of the R.C.V.S. regarding putting the V.S. Act in force to suppress and punish farriers and other non-registered men styling themselves and practising as V.S. The members of the Council press us closely for our votes to elect them to the post, but, after getting their own purpose served, they leave us to take care of ourselves. What is the use of the Council unless they act as our representatives and further our interests?

Some seven years has now elapsed since the passing of the V.S. Act., and,

for what use it has been, we could have done without it. It has given the registered farriers of the metropolis power to use our title of V.S., the majority of which may be seen daily working in the forge as ordinary farriers. Again, as to the non-registered farriers, they use the term "Veterinary," and practise with impunity.

The "Act" was intended to prevent and suppress non-registered and convicted men from practising.

We are told by the Council that they cannot take steps to prosecute the non-registered farriers and others for practising and using the term "Veterinary," etc.

The Council say it is not sufficient proof for them to prosecute those men who have the terms M.R.C.V.S, Veterinary Surgeon, etc., over their doors. They must have a bill-head or card with the above terms on it before they can take steps to prosecute. What better proof do the Council want than these public exhibitions ?

The following are a few specimens of these men's boldness in styling themselves on their boards :—

(1) Chiswell & Co., Veterinary Surgeons, M.R.C.V.S. Infirmary for Horses and Dogs. Contracts taken for Shoeing and Doctoring. New Road, Whitechapel, E.

(2) Williams & Wederall. Infirmary for Horses and Dogs. Grove Street, Commercial Road, E.

(3) Alfred Alp. Cures Quittors, Sandcracks, Cankers, etc. Cannon Street, E.

Neither of the above are on the V.S. register. What more proof does the Council want than these descriptions on the signboards over the forge-doors ? They are more public and of more proof than cards, etc. Some men do not go so far, but yet they are practising and leading the public to believe that they are V.S. They do not have any terms on their boards, etc.

There is room for a clause to be inserted in the V.S. Act to prevent and suppress non-registered men from practising, even if they do not use any terms.

The legal, dental, and other professions take steps to prevent, suppress, and punish men practising illegally ; and they make a public example of the miscreants.

Why should the veterinary profession be backward in doing likewise ?

H. Gray.

Stratford, E., *August* 29, 1888.

AN ARMY RESERVE OF VETERINARY SURGEONS.

Dear Sir,—As a reserve of medical officers has been formed, I think we should not be behind hand in forming a reserve of veterinary officers. On looking through the Army List, I see there are a number of yeomanry cavalry regiments without veterinary surgeons. The cause of this I do not know. It might be the expense of the outfit or the small pay.

If I might make a few suggestions, I should propose that all yeomanry veterinary surgeons should be on the reserve of veterinary officers ; that they should be under the control of the Principal Veterinary Surgeon of the Army, and be connected with the Army Veterinary Department. Instead of wearing the regimental uniform, they should wear the departmental, which would be less expensive, and a small annual allowance might be allowed

for being in the reserve. That length of service should count for higher rank. They should be honorary members of the regimental mess to which they are attached.

By the formation of such a reserve, we should always have an efficient body of practical men ready to do duty when required. In some yeomanry regiments the status of the profession has been forgotten, by members being content to take the appointment of veterinary surgeon without a commission, which they are entitled to.

I think yeomanry veterinary surgeons will see the importance of such a step; also other members of the profession who will be in the reserve. I know that you, sir, will do all that you can to give the snbject space for discussion in your valuable journal, and also that you will approve of this important scheme, as you are ever ready to lend a willing hand to raise the status of our noble profession.

GEORGE F. PICKERING, *V.S., Yorkshire Hussars.*

York, *September 23rd.*

DESCRIPTIONS OF COW-POX, AND THE VETERINARY AND MEDICAL SCIENCES.

SIR,—In a recent number of the *British Medical Journal*, Dr. Jenner's description of cow-pox, Ceely's description of cow-pox, and a German and French description of this disease are given. I do not propose inquiring into all the descriptions of this disease in cows which have been published, but I may ask, Why has Chauveau's description of cow-pox as given in France, and Fleming's description of cow-pox as given in our own country, been omitted from the above list? Is it that they are veterinary surgeons, and English doctors try to ignore the work of veterinarians? or can it be that we do not know our own work, and must ever look up to medical men to pave the way for veterinary practice? But I contend that it is not sufficiently widely known that veterinarians do at least know something of the pathology of cow-pox (see its literature), and say that the assertion is still received by many medical men with great incredulity. Why is it so? There must be a reason for it. Is it because we are not called "Doctors"? Then the remedy is very simple, it appears to me. Introduce a Doctor's degree, corresponding to our Fellowship degree, and call veterinarians Doctors of Veterinary Science, if you will, and the trouble is easily tided over. In America this plan was adopted, and at once medical men stretched out the hand of friendship to veterinarians, not because they are different men, but because they are now called "Doctors," and before they were only veterinary surgeons. Surgeons in the Army and in private practice prefer the title of Doctor, and so do veterinary surgeons. Why not institute a system of examinations, then, which shall confer on the successful candidates the title of Doctor of Veterinary Science, similar to that granted in human medicine?

It is somewhat more gratifying to see an article on Tuberculosis by Dr. Woodhead in a recent number of the *Lancet*, in which several veterinary authorities are mentioned, but in such a way as to make it quite unintelligible whether they are veterinary or medical writers quoted. And notwithstanding the definition of the term Doctor recently given by the editors of the *Lancet*, they still prefer to speak of "Dr. MacFadyean" in coupling his name with that of Dr. Woodhead in their researches on Tuberculosis in cattle. "We still maintain," say the editors of the *Lancet*, "that it is to the pathologist we must look for the full solution of the problems of disease." We quite agree with

the *Lancet*, provided that the pathologist embraces in his inquiry not merely the lesions discovered in the human patient, but those also noted in the lower animals, and all the peculiarities of the disease in these.

We have little doubt that co-operation, for which the nineteenth century is daily affording better facilities, is destined to promote that progress which is essential in every walk of scientific investigation, to conduce to harmony of method and result; and it is in keeping with this fact that the universities on the continent of Europe, both in their professoriate and in other places of trust under Government, are more numerously and characteristically represented than those of any other country. Imperfectly as these advantages may yet be appreciated, illustrations of what the lack of them implies have been frequent of late years, especially in England—the Scarlatina discussions having lately shown how much more effective for good they might have been had the intercommunion of study and thought been availed of during the earlier part of their investigations.

A FRIEND.

India, *Aug.*, 1888.

DR. FLEMING'S OPERATION FOR ROARING.

DEAR SIR,—I have no doubt it will be interesting to the members of the profession to know that the two horses operated upon for Roaring, by Professor F. Smith, during the annual meeting of the National Veterinary Association held in this city on July 18th, are, up to the present, no better. Both are bad grunters, aud upon the slightest exertion make as much noise as ever.

GEORGE ELPHICK.

Newcastle-on-Tyne, *Sept. 15th.*

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from G. A. Banham, Cambridge; H. Gray, Stratford; J. Gordon, Queensland; F. Raymond, A.V.D., Woolwich; A. E. Macgillivray, Banff; Professor McCall, Glasgow; R. W. Burke, A.V.D., India; "A Friend;" S. Bailey, Oldham; T. Chalwin, Adelaide, S.A.; S. E. Nash, Richmond, Yorks; J. B. Hallen, Simla; Messrs. Arnold and Sons, London; P. S. Hutchinson, London; Professor Walley, Edinburgh; G. Morgan, Liverpool; G. T. Pickering, York; J. Malcolm, Birmingham.

BOOKS AND PAMPHLETS: Scientific Memoirs of the Medical Officers of the Army of India; Third Annual Report of the Bureau of Animal Industry for the Year 1886; *E. Crookshank, M.B.*, An Investigation of an Outbreak of Cowpox in Wiltshire; *F. S. Billings*, Swine Plague.

JOURNALS, ETC.: *Journal of National Agricultural Society of Victoria; Quarterly Journal of Veterinary Science in India; Echo Vétérinaire; Recueil de Méd. Vétérinaire; Annales de Méd. Vétérinaire; Lancet; Revue Vétérinaire; British Medical Journal; Thierarzt; Wochenschrift für Thierheilkunde und Viehzucht; London Medical Record; Hufschmied; Giornale di Veterinaria Militare; Forest and Stream; Clinica Veterinaria; Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie; Live Stock Journal; Edinburgh Medical Journal; Journal de Médecine Vétérinaire; American Live Stock Journal.*

NEWSPAPERS: *Times of India; Melbourne Herald; Newcastle Daily Journal; Pioneer; Leeds Mercury; Morning Chronicle.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

NOVEMBER, 1888.

CAROTID ANEURISMATA IN A HORSE.

BY JOHN HENRY STEEL, F.R.C.V.S.

THE patient was a fat grey Arab (Gulf), aged, nearly fifteen hands in height, used for harness purposes, entire, the property of a native gentleman of Bombay. Admitted for swelling underneath the collar on the off-side. This proved to be of some standing, firm under pressure, either deep-seated in the levator humeri or underneath it; pressure caused some flinching, and the firm mass was about the size of a goose's egg. The practical class of the Bombay Veterinary College was instructed that this might be one of those cases of tumour in the substance of the levator muscle which had been recently described at length in a valuable paper in the VETERINARY JOURNAL, and which generally are thick-walled abscesses, the result of long-continued collar pressure, or simple fibromata due to the same cause. It might, on the other hand, be similar to the tumour in a working bullock operated on by me at Secunderabad, which animal died under operation for removal of the growth, a carotid aneurism. In favour of the former view was the greater frequency of levator humeri tumours than carotid aneurisms; in favour of the latter was the depth of the tumour, and its deeper part certainly being interior to the inner surface of the muscle. The growth was inclined to increase in size, and the owner wished it removed; blisters had proved ineffectual for procuring its absorption. An operation was decided on, firstly, for diagnostic purposes, and, in view of the possibility of aneurism, with the greatest caution; secondly, for removal of the tumour if fibrous, or for opening it up thoroughly if only an abscess. The operation to comprise—(1) placing the animal under chloroform; (2) the exploratory incision after puncture with a small trocar; (3) such measures as might be decided on when the diagnosis was

complete. Anæsthesia was induced in the ordinary way, then an incision was made through the skin longitudinally over the tumour from before backwards, giving ample room for future proceedings. A similar incision was next made on to the tumour through the levator muscle and parallel with its fibres, but as the reflex contraction of the fibres caused them to firmly grasp the knife by becoming tense, this proved of little use, and ultimately I had to divide the fibres transversely for about two inches. The superficial fibres were normal, the deeper white and atrophied (the result of inflammation), and gradually fused with the dense wall of the tumour. Puncture with the trocar now proved ineffectual for drawing off any contents, so a small exploratory incision was made, and the tumour found to consist of a firm fibrous wall and yellow solid lymphy contents. These latter proved to be readily separable from the wall by insertion of a finger through the orifice, and were evidently a long-standing clot, connected with a similar plug of the carotid. It was manifestly injudicious to remove the tumour, therefore a small amount of the coagulum was taken away, the wound well dressed with carbolic oil and filled with a pad of medicated tow, and the animal allowed to rise. The parts healed in due course, and the tumour was smaller, but just at the last stage of cicatrisation one morning the patient was reported as manifesting tetanic symptoms, the tail being raised, the bowels confined, and the haw protruded. These symptoms having been verified, a full dose of physic was given, and they subsided in a day or two. However, we were not able to make a good case out of it, for when just about to discharge the animal (to be worked with deeply chambered collar) we found a fresh aneurism had appeared on the near side of the neck, exactly symmetrical with that on the off-side. Patient was discharged as permanently unfit for harness, and liable to fall dead at any time.

ANTHRAX IN SHEEP.

BY EDWARD STANLEY, F.R.C.V.S., GOVERNMENT VETERINARY SURGEON, SYDNEY, NEW SOUTH WALES.

In accordance with instructions from the Under Secretary for Mines, Sydney, New South Wales, on August 9th, I proceeded to Bourke, to investigate a sudden fatality in a mob of sheep, and submitted the following report subsequently :—

It appears that Mr. Hurtle Fisher purchased a mob of 12,000 ewes in lamb, from Nelyambo; and, owing to the flooded state of the country, had to rent a paddock on Jandra Station, near the Cobar Road. After remaining there for four months, during

which time most of the ewes lambed, they commenced the journey with 9,000 lambs, via Bourke, in order to cross the Darling River to Nee Nee Station, Queensland—Mr. C. Gould, drover, in charge.

On the afternoon of the fifth day some of the leading sheep began to lag behind, looked ill, staggered about, and quickly died. The mob went on to the camp named Stone Quarry Reserve, and next morning 800 were dead.

The ewes were old and low in condition; the lambs were vigorous, well-grown, and healthy. About fifteen or twenty sheep were too ill to walk off the camp; these, and several others that were ailing (say) 150, were bled; about twenty of these are alive still. All the mob that could move passed on, leaving a track, marked by dead sheep here and there, for a distance of three miles. Twelve more died at the sixth camp, on Bourke Common, and two the following night. Since then very few deaths have occurred.

Accompanied by Mr. C. Gould, drover, and Mr. Inspector Mallon I visited the sheep; and, on passing the tail of the mob, a very few sickly ones could be noticed walking slowly, and carrying their heads straight, with stiff necks, not attempting to feed. The mob, both ewes and lambs, were well spread and feeding, and looked healthy.

Several dead sheep were passed scattered along the track, presenting nothing striking in their appearance. At length we reached Stone Quarry Reserve Camp, and there saw about 800 lying dead in all sorts of attitudes; some having died asleep; others having struggles in convulsions; some in groups and many apart; but all being upon a two-acre space. Almost all these were ewes; not more than a dozen lambs had died. On the fatal patch there were three sheep alive; one too ill to stand and almost unconscious; this was killed and examined. Two others had jumped on their feet; they watched us; then soon lay down again, and did not attempt to move when we examined them. Another lot of six had moved off together; these had been left behind ill; this was evident, as they had been bled and recovered; they were too lively to be caught.

About half the carcases were skinned; they were decomposing. I opened and examined some of them, but they were of no use for diagnosis. On looking through the unskinned carcases, I noticed a great many had blood trickling from the nostrils, and on the skin being removed, the characteristic bruised patches of Anthrax were unmistakeable. The butcher informed me that he had not skinned a single sheep that did not show the blood-stained patches in some part or other of the body, chiefly about the shoulders and neck.

I made ten or twelve *post-mortem* examinations, two being killed for the purpose. Three had apparently died only a few hours. The internal organs were very variably affected, and the pathological changes were not very decided in any one case, as it was at least the fourth day after the outbreak. The sheep I saw ill only suffered from a mild form of the disease, and that explained the absence of the virulent indications. The spleens of several were enlarged and dark coloured, but in some were very little affected. In one the urine was blood-stained in the bladder. The stomach and bowels were comparatively healthy.

I could see no indication of plant poisoning. I secured the spleens of two fresh cases (but the disease was not well marked in them) for further examination, and I mixed a little of the spleen blood with water and gave it to three hoggets. Fifty-six hours afterwards it had taken no effect whatever. I then introduced a seton (saturated with this blood while fresh and then dried) under the skin of the thigh in two of these hoggets, but it did not produce any ill effects. The cultivation of micro-organisms is necessary to determine whether they are bacilli or bacteria, in order to distinguish splenic Anthrax from symptomatic Anthrax.

With reference to the rumour that the *Euphorbia Drummondii* caused their deaths, it is simply too absurd; and I cannot understand the tenacity with which stockmen are content to stick to this blunder.

I went to the place and examined the feed with the drover, where he said they had eaten it (the *Euphorbia Drummondii*), and instead of finding abundance we had to search for it, and found small plants scattered about here and there, just as it is found to be the case wherever it has been introduced. I subsequently found it quite as plentiful on the town common; also in the town and near the trucking yards, where hundreds of thousands of sheep have eaten it on all occasions with impunity. At this season of the year the plant is very small indeed, and close to the ground. There was ample feed beside it. These sheep were not hungry; therefore I fail to connect it in any way whatever with their deaths.

In my opinion, Anthrax was the poison; and the germs were left on this road at this place last year during spring, when eighty sheep died out of 4,000 in one night. These germs have renewed their virulent vitality with the early spring vegetation, and hence the mortality of this mob. A similar case occurred eight miles from Bourke, on the Western Railway stock last year; then 150 died in a night in a mob of 15,000.

DRACUNCULUS MEDINENSIS IN THE DOG.

BY G. R. GRIFFITH, A.V.D., CAIRO, EGYPT.

On the 14th September, a fox terrier bitch, the property of an officer, was brought to my notice as suffering from a worm under the skin; it had been observed a few days previously.

The worm was situated along the front of the fore-arm, extending from the elbow to the foot; it could be distinctly felt underneath the skin, coiled up like a piece of twine.

The dog appeared in good health, but an abscess had formed in the region of the foot, at the extremity of the worm.

I cut down on the worm at the elbow, and passed a fine probe underneath the body; then by gentle traction I removed about a foot, when the worm broke. A second incision was made halfway down the radius, and about six inches more of the worm was removed, and wound round a piece of cotton wool. Finding further traction useless, the cotton wool was placed over the incision, and a bandage applied; four hours later I again attempted to remove it, when it broke; the remaining portion, including the head, was then taken away.

On examination, I found the worm to measure (when extracted) two and a half feet long, and from its appearance I was of opinion that it was similar to the Guinea worm found in man, but I could not find any record of its having been found in the dog. Mr. Littlewood, V.S., Sanitary Department, Egypt, kindly offered to submit the worm to Dr. Osman Bey Ghalib, of the Public Instruction Department, a well-known naturalist, who confirmed my opinion.

[Mr. Griffith has forwarded the specimen for our inspection, and there can be no doubt as to the worm being the *Dracunculus Medinensis*. So far as we can trace, this is the first time this subcutaneous filaria has been found in the dog in a fully developed state. In 1868, Professor Rivolta, of Turin, in *Il Medico Veterinaria* (p. 300), published an account of a herpetic disease in a dog, due to embryos which he thought were those of the *Filaria* or *Dracunculus Medinensis*.

Cutaneous Helminthiases in the dog has been frequently reported, *i.e.*, by Ercolani, Siedamgrotzky, Möller, Leuckart, and others; but the dermatoses to which they gave rise were either pustular or of the nature of Scabies. It is true that more than a century ago, Hussem (*Verhandlungen van het Genvotsch te Vlissingen*, Middleburg, 1771) stated that Dœrssel had found the worm at one time in a dog at Buenos Ayres, and at another time in a dog at Curaçao. Rudolphi alludes to this statement in his *Entozoorum Historia Naturalis*. But the description is vague.

Neumann does not mention the fully developed worm being found in the dog, nor yet in any other animal, and other veterinary writers are equally silent.

In 1861, while at Tientsin, North China, we found the mature Dracunculus in an abscess on the outside of the tarsus of a horse which had been brought from India. The specimen was sent home to the late Professor Dick, and is now in the museum of his school in Edinburgh. It is, we believe, unique, so far as the horse is concerned, and this of Mr. Griffith is also the only one yet found in the dog. It will be deposited in the collection of Entozoa in the Museum of the Royal Veterinary College, London.

Fedschenko has shown that the worm makes its way into its host as a larva concealed in the body of a *cyclops* (small crustaceous animal), which is swallowed along with the water in which it lives. The young worms then reach the intestine, where they remain only a short time before they bore their way out.—Ed. *V. J.*]

FRACTURES OF MAXILLÆ.

BY MR. J. BRODIE GRESSWELL, F.R.C.V.S., LOUTH, LINCOLNSHIRE.

On October 7th, 1887, I was requested to see a two-year-old cart-colt, the property of W. H. Smythe, Esq., of Elkington Hall, which had received an extensive injury to the face while out at grass.

On examination, I found a complete fracture of the anterior maxillary bone, the lesion commencing just above the incisors, and proceeding inwards irregularly, about 4 inches. The teeth were turned inwards towards the inside of the mouth, the buccal mucous membrane was much swollen and bruised, and the teeth and alveolar cavities on the left side were crushed.

Secondly, I found the left inferior maxillary bone fractured at the symphysis and about $2\frac{1}{2}$ inches inwards.

After having cast the colt, I drew out and cut away all the loose teeth and bone, and fixed the broken parts into apposition with strong metallic sutures. This latter was a task of considerable difficulty, and I was only able to draw the bones into position by twisting the wire round and round by means of a pair of strong pliers. Another difficulty was to get a suitable hold for my sutures. Before allowing the animal to get up, I dressed the wounds with tincture of myrrh and carbolic acid.

For some weeks the horse was fed entirely upon gruels and bran mashes, the wounds being washed and cleansed twice daily, and dressed with solution of carbolic acid and eucalyptus.

The parts were completely healed in about two months, although I did not extract the sutures until late in the following January.

On September 3rd, 1888, I was called to see a three-year-old black cart-horse, the property of N. Clayton, Esq., of Lincoln, at Withcall.

I was told that the colt had been kicked over the mouth by another horse. On examination I found that the anterior maxillary bone was completely fractured, the lesion in this case commencing just above the alveolar cavities of the incisors, and proceeding in an oblique direction inwards and downwards about $3\frac{1}{2}$ to 4 inches. The two central incisors were broken at the neck, while the alveolar cavities were considerably crushed, and all the neighbouring parts swollen and bruised.

After having cast the horse, I removed all the loose teeth and broken bone, and fixed the splintered jaw with metallic sutures.

All further treatment was carried out as in the case of the two-year-old. About three months afterwards all the parts were completely healed.

LAMENESS DUE TO THE PLUGGING OF THE ILIAC ARTERIES.

BY H. GRAY, ASSISTANT TO ARTHUR H. FARROW, ESQ., M.R.C.V.S., LONDON.

On June 10th of this year T. B. sent to our infirmary an Irish bay nag-horse, aged nine years, for our opinion as to the nature of the lameness of the near hind limb, and its treatment. We may here mention that the owner purchased the animal in the month of January, 1888, and from that time he worked with perfect freedom, and had never shown signs of lameness until a few days before the above date. When brought out of the stable the horse did not seem to walk lame, but when trotted he went lame in the near hind limb, which became gradually worse after going a journey. Both hocks were enlarged, and we did not perceive muscular spasms or twitching-up of the limbs. We diagnosed it as a case of hock lameness, for which he was fired and blistered in both hocks, and turned out to graze on the 12th of June. After being at grass for a fortnight, we noticed that the horse galloped about the field with ease without manifesting signs of lameness. He was brought up from grass on August 18th, and from that time he worked perfectly well without going lame, until September 3rd.

On September 3rd, after being driven a short distance, he was noticed to sway from side to side and lose control over the hind quarters, and wanting to lie down. He was taken home covered

with perspiration and suffering from colicky pains. We saw the horse about three-quarters of an hour after his arrival home, and we found no symptoms of importance, beyond the body being covered with perspiration, pawing with the fore limbs, respiration accelerated, and a frequent, thumping pulse. An aperient and anti-spasmodic were administered, and these symptoms soon abated. He was rested until September 10th, when, after being driven a short distance, the colicky symptoms, etc., reappeared. He was rested again until September 16th, when, after being led a few yards, the owner noticed him to fall suddenly lame in the off hind limb. He requested our attendance.

He was taken out into the open, and on standing behind the horse I noticed that the muscles of the hind-quarters had considerably wasted, especially the muscles of the gluteal region, leaving hollows on the haunches. The muscles of the tibial region had also undergone considerable atrophy, so much so that the heads of the tibiæ appeared very prominent. The temperature of the limbs was normal and equal. He was then walked a few yards, when he suddenly fell lame in his off hind limb, at the same time moving the trunk diagonally; after going a few yards farther he would catch up the limb spasmodically, as in Stringhalt. If made to go still farther he would hop on three legs, at the same time moving the off hind limb convulsively, and then drawing it up, so that that portion of the limb, from the hock to the foot, would be held in a straight line with the floor of the abdomen. After standing in this position for a few minutes, he would again move the limb convulsively, at the same time turning his head towards the quarter and trying to bite it, and groaning from pain; then he would place the foot on the ground and appear easy. If pushed beyond this there was a tendency to reel and fall to the ground. He was rested again for a few minutes, then taken out of the stable, when the symptoms returned.

Suspecting the blood-supply of the hind-quarters being at fault, I examined the aorta and iliaco per rectum. The pulsations at the bifurcation of the aorta and of the internal iliaco were of a feeble and non-resistant character, and on compressing these vessels I could feel a non-resistant body in the lumen. The external iliaco were obliterated and solid; in these there was no pulsation. I advised the owner to have the horse destroyed, as it was a hopeless case.

Mr. A. H. Farrow saw the horse next day, and confirmed my diagnosis.

Believing that the previous two attacks of Colic were due to this plugging of the iliacs, I further inquired of the owner the symptoms he noticed when the horse was brought home suffering from these

attacks. He stated that the horse came home trembling, perspiration running off the body, rolling of the hind-quarters, arching of the back, knuckling over of the hind fetlocks, and frequently looking round to his hind-quarters, roaring and groaning from pain. The breathing was quick and hard, the nostrils were distended, and the eyes seemed as if strained out of their sockets. There was dribbling of a small quantity of urine from the penis, which had protruded from its sheath for about one foot. There was also pawing with the front limbs, and a disposition to lie down or roll, stretching himself out full length on his side, and frequently turning his head to the quarters, groaning and roaring from pain. The horse had never been known to have suffered any illness, beyond what is described above, since he has been in the owner's possession. After these attacks had subsided he always appeared cheerful, fed regularly, and urinated and defæcated normally.

As the owner would not have the horse destroyed, Mr. Farrow obtained his consent to send the horse to the Royal Veterinary College, for Professor Axe's opinion. On the morning of the 24th September, I saw the horse before he was sent to the College. He was cheerful and spirited. The pulse was normal; also the temperature of the limbs was normal. He did not show any signs of lameness at first, but after going a short distance the cramps reappeared. He was with difficulty got to the College, a distance of some four miles. The animal had to be stopped several times, to allow the cramps, etc., to abate. He roared, groaned, and knuckled over at the fetlocks, rolling from side to side, and wanted to lie down.

He was submitted to a little exertion at the College, when the above-described symptoms reappeared; but, in addition to these, it was noticed that the venæ saphenæ were imperceptible, but after repose the vessels gradually refilled. He suffered a good deal of pain, and the hind limbs were cold, the off hind limb remaining icy cold and partially paralysed until the horse was destroyed. Prof. Axe confirmed our opinion, and the owner consented to have the horse destroyed. On September 26th he was destroyed in the *post-mortem* house at the Royal Veterinary College. Prof. Axe made the *post-mortem* examination, at which we were present. The posterior aorta for about three inches at its posterior end was completely occluded with the thrombus, which was about one inch in diameter. The clot also extended, and occluded the posterior mesenteric, and the internal and external iliac arteries.

The thrombus had considerably increased in size since I examined the vessels on the 16th. The insufficient blood-supply to the bowels, bladder, and muscles of the hind quarters during exercise accounted for the symptoms.

I may state that I saw Mr. C. Sheather's case at the College in 1884, whilst a student there. Lameness due to the plugging of the blood-vessels supplying the limbs is not so rare as some would lead us to believe.

PERSISTENT VOMITION IN THE COW.

BY G. T. PICKERING, M.R.C.V.S., YORK.

A BLUE-AND-WHITE cow, five years old (the property of a farmer), had previously enjoyed good health, was a deep milker, and in good condition. The farmer attended a sale, and bought a quantity of clover, which was mouldy. He bedded the cow with some of it, and also gave her a quantity to eat, which she partook of greedily.

She appeared all right when last seen at night. When first seen in the morning he observed that the manger was almost full of half-digested food; the cow had evidently been vomiting. He gave her a drink of chilled water, which immediately caused her to vomit; he then gave her a handful of hay, which had the same effect. Thinking there was some obstruction, he administered a dose of salts, with treacle, etc., which was immediately returned. This state of things lasted for about three or four days, and it did not matter what food she had, whether liquid or solid, it made her sick, although she did not refuse anything that was offered her, even taking her own vomit, which was soon returned.

I was called to see the cow after she had been ill about four days. She was standing with her back arched, eyeballs prominent, anxious expression, extremities and surface of body cold, skin tight, staring coat, etc.; pulse 70, weak, resp. 18, temp. 100° Fahr. Visible mucous membranes slate coloured. She did indeed look a most pitiful object. She had passed a small quantity of fæces, which was marked in flakes, thick, and greenish-black in colour. Although the owner told me that whatever she took herself, or what was administered, made her vomit, I thought I would try the effect of about a pint of tepid water. But this, almost as soon as it had been administered, caused vomition, and the following symptoms were exhibited: She rolled the tongue about, a quantity of saliva dribbling from her mouth; champing of the teeth; eyeballs bulging and rolling; the head was brought almost to the ground; the cervical muscles were fixed; the fore legs extended and slightly apart, and back arched. She then began retching violently, the abdominal muscles contracting very quickly, and the tail being slightly elevated. She then vomited a small quantity of dark-coloured fluid, and she

trembled for a short time, then appeared easy. I saw it was impossible to administer anything by the mouth, so at once passed the trocar and cannula, and then inserted a funnel into the cannula, and administered the following purgative:—

℞.—Ol. Lini. ojss, Ol. Crotonis mxx., Mag. Sulph. ℥iv.
Gent. R. pulv., Zingib. R. pulv., a.a. ℥ss. in gruel.

After the administration of the above there was not the slightest attempt to vomit, although the medicine had gone down the cannula into the rumen.

I then ordered the animal to be well whisped over, clothed well, and to be kept warm, and also allowed plenty of fresh air, etc. As I had no doubt there was obstruction of the third stomach, from the appearance of the fæces, constipation, etc., I followed up the purgative with stimulants, and small quantities of nutriment in a liquid form, leaving the following mixture to be administered every four hours—

℞.—Sp. Aeth. Nit. ℥iv., Chlorodyne ℥i.
Sp. Ammon. Aromat. ℥iv., Tr. Nux Vom. ℥iv.

Four doses—1 to be administered in 3 pints of gruel, with a little treacle, and 4 oz. of whisky at each dose. On no account was any food to be given, except what they gave down the funnel.

They gave the cow milk, gruel, linseed tea, etc. On seeing the animal next day she appeared a little better; she had not vomited since food had been administered in the way directed.

The nutriment and stimulants were on the third day continued. Someone gave her a small quantity of hay, which caused her to vomit at once. Seeing that it was no use trying to feed her in that manner, they kept on as directed by me for a few days longer, when I ordered a small quantity of gruel to be placed in the manger, which she took without causing her to vomit, and by gradually bringing her from taking a small quantity to a larger, she improved, although the appetite was for a short time capricious. I gave mild vegetable tonics, gentian, ginger, etc., and by careful feeding and dieting, the animal gradually improved and did well.

Remarks.—Here was a healthy cow which, until it had partaken of a quantity of mouldy clover, had never been ill. The clover did not seem to affect it until a large quantity had been taken; the stomach being well filled and digestion proceeding. Many people have the erroneous idea that cows will eat quantities of bad hay without any ill effects; in this case, the clover being extra bad, caused the symptoms described. I examined the clover, and could not detect any poisonous grasses or herbs; it had a foul smell,

was very mouldy, and in fact I was surprised that the farmer had given the cow such rubbish, which was only fit for manure.

I might mention that a few days after the cow had recovered, she got a small quantity of mouldy clover again, which caused her to vomit. I have often found the cannula very useful in administering medicines of various kinds, when it has been inadmissible to give them by the mouth. By administering them in this way the action is more rapid, especially when there is obstruction or paralysis, as in cases of milk fever, etc.

SKIN-GRAFTING OR TRANSPLANTATION.

BY T. ASSHETON SMITH, M.R.C.V.S., CALCUTTA.

THE above subject, as connected with veterinary surgery, should, I think, possess interest for both the profession and the horse-owning community. It appears, however, to have received little attention from either.

I venture to enter into the following details of the process, in order that any practitioner who has occasion to perform the operation may escape the discouragement and failure which attended my first attempts :—

The subject of this experiment was a Waler pony which met with an accident, skinning the near fore-leg on all sides from knee to fetlock. I have no hesitation in saying that but for the success of the treatment the results of the wound would have necessitated her destruction.

Seeing the case about an hour after the accident, I strapped up what skin remained with adhesive plaster, and put the mare in slings. Within three days, however, the skin had sloughed off, exposing bone, tendons, ligaments, etc., and it was evidently impossible that the skin from the edges of the wound (fully twelve inches apart) could have supplied sufficient material to cover the lesion. I then determined to try grafting, though with small hope of success, as I had never heard or read of its employment in veterinary practice.

During the time the mare was under treatment it appeared that the grafts "took" better as the wound advanced in age. I therefore think it probable that the want of success which attended my first efforts was due to—(1) the freshness of the wound; (2) the coarse nature of the skin I was then employing, taken from the inside of a horse's thigh; and (3) lack of experience in the process, and of knowledge of the best methods.

On subsequently trying the skin of a frog, and that of a chicken, for purposes of transplantation, I obtained some successful grafts from each; but as the latter "took" more freely, I ultimately confined myself to its use exclusively.

The *modus operandi* which gave the best results was as follows: By way of preparation, the wound should be dressed with an antiseptic, preferably a solution of bichloride of mercury (1 in 5,000) in water, firmly bandaged, and left for two or three days undisturbed. This will level the granulations and obviate the necessity of cauterisation, which should be avoided. Then having procured the chicken, a minute point of skin from the side of the body under the wing is raised with a fine forceps, snipped off with a pair of sharp scissors, and placed on the thumb-nail. With a sharp scalpel it is then divided into portions, the smaller the better, which serve as grafts.

The point on the wound where the skin is to be renewed is gently scraped with the scalpel without drawing blood, and with the point of a silver needle or probe the grafts are pressed in between the granulations.

When a sufficient number have been applied the whole wound is freely powdered with iodoform, covered with a piece of gutta-percha tissue (which is non-adhesive), and over all a long bandage of bichloride gauze is firmly rolled. In this state it is left undisturbed for a week.

The appearance of a successful graft is unmistakable; it presents a characteristic small, white speck, from which faint lines radiate.

It is important, when teasing the skin on the thumb-nail, to avoid delay, for evaporation quickly deprives it of its natural moisture and renders it dry and useless. It is also unadvisable to wash or cleanse the skin before removing it from the chicken; and it should be borne in mind that as the epithelial layer is all that is required, as little connective tissue as possible should be taken, and absolutely no fat, as it decomposes rapidly.

I believe that so simple an operation might be frequently performed with great benefit in those cases we not infrequently meet with, in which a large "sit-fast" from a saddle or harness-gall is removed with the knife, and the wound, though it readily heals, is constantly breaking out afresh, the lost skin being replaced by a very poor and inadequate substitute.

THE BLISTERING PROPERTIES OF AGAVE AMERICANA.

BY M. DECROIX, LATE PRINCIPAL VETERINARY SURGEON OF THE FRENCH ARMY.

About the year 1860, when I was in the 1st Chasseurs d'Afrique, I discovered that the *Agave Americana*, a plant very common in Algeria and Central France, possessed marked blistering pro-

perties. After having made about twenty experiments on both myself and various animals, I read an article on the subject before the Société de Médecine d'Alger.

On leaving the Chasseurs d'Afrique for the Garde de Paris in 1862, I thought it would be interesting to prove it. The agave is an exotic in our climate, but growing in a hothouse, had the same medicinal effects as when it grew naturally in Algiers. I accordingly made a number of experiments with specimens obtained from the Jardin des Plantes, the results of which were published in 1867, in the *Journal de Médecine Vétérinaire Militaire.*

Last winter I happened to find a small agave plant growing in a pot in a dwelling-room, the leaves of which were somewhat withered and faded, and by a new series of experiments I was enabled to prove that even under the most unfavourable circumstances the plant still possessed medicinal properties.

I took a well-grown leaf, removed the outer green layer, and reduced to a pulp by a hammer the inner, white, fleshy part, applying the pulp in the same way as mustard.

After a few hours, the skin became red, with pain, infiltration of the subjacent cellular tissue, and heat, just the same as if mustard had been used. Yesterday evening I applied this pulp to both my fore-arms, and I now show you the result. (M. Decroix showed both his fore-arms where the agave had been placed.) Mustard was applied to one side of the chest of a horse, and agave to the other, and the blistering effects were more marked with the latter.

In man, where a less energetic action is required, it is only necessary to rub some of the juice from a cut leaf into the skin for two or three minutes. MM. Ch. Roucher, of Gros Caillon, and Clement, of the Veterinary School, Alfort, have endeavoured to extract the principle, but have not succeeded.

The above notes on the *Agave Americana*, by M. Decroix, may be of use to those of your readers whose professional duties take them into the colonies or India. The agave, or American aloe, is a native of most warm climates, but is very abundant at the Cape of Good Hope and Mexico, and from the leaves the pite hemp is obtained, and in Mexico a drink called *pulque*. The Hottentots on the Orange River extract a poison from it, for their arrow-heads.

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ON THE INFLUENCE OF FILARIA PAPILLOSA ON THE HEALTH OF HORSES.

BY JOHN HENRY STEEL, F.R.C.V.S.

THE frequency of enlarged testis and œdematous cord among Arab and Persian horses is a notorious fact, and possibly is in association, as due to the same irritant influence, with relaxed abdominal rings and consequent inguinal and scrotal herniæ, lesions also very familiar among imported horses in Western India. My colleague, Veterinary Surgeon Pottinger, fully confirms my observations as to the dependence on, or at any rate association with, big testicle and dropsical cord, often filaria papillosa. Almost invariably on incision into the scrotum, in hydrocele, sarcocele, and cases of adhesions of the testis to the scrotum, one or more specimens of the thread-worm in question wriggle through the incision or come away with the hydrocele fluid. A bay Gulf Arab entire horse, four years old, slightly "down" in one hip, was admitted into the hospital associated with the Bombay Veterinary College, for treatment of debility of unascertainable origin, but extreme degree. The animal was so reduced in condition that it apparently could not long survive admission, but it continued to feed freely for a month or so before it succumbed. No amount of iron, linseed oil, or other tonics seemed to have any effect in strengthening the patient. Its food seemed well digested; its visible mucous membranes were uniformly of an extreme pallor, coat unthrifty, and appearance such that he used to be pointed out to visitors as a remarkable instance of extreme emaciation, and called the "anatomical horse," on account of his value for demonstrating osteology. A very faint yellow tinge of the conjunctivæ led us to think there might be some liver derangement, but the evidences of this were anything but satisfactory. Finally, the animal fell in the stall during the night, remained recumbent for a couple of days, and after a short period of delirium, expired. Autopsy showed merely the liver small and of a yellow colour, an *enormous* number of filaria papillosa in the peritoneal sac, and softening of the bones, so that the ilium of the side on which the animal fell shortly before death was broken through its blade. Subsequent examination of the bones after maceration, showed that they were like pasteboard in consistency. The enormous number of parasites in the abdomen led me to surmise that they were the producers of the anæmia, debility, and mollities ossium, but this view would be difficult to establish conclusively. The animal had been in Bombay for about one year, and had never been in saleable condition after import from the Persian Gulf. Filaria papillosa is almost invariably found in the abdomen of working oxen in Bombay.

FATAL DIARRHŒA IN ANIMALS CAUSED BY THE PUCCINIA GRAMINIS.

BY R. W. BURKE, A.V.D., JUBBULPORE, INDIA.

SEVERAL animals have recently suffered, in this station, from acute Diarrhœa, which has in some cases terminated fatally, where enteritis had already supervened before my arrival. I have examined the grass in each case, and found it was affected with the rust fungus, or *Puccinia graminis*. It is found chiefly on the stems and leaves of the grass, appearing as yellow patches, which afterwards become dark brown or black in colour. Under the microscope the fungus resembles very much in shape a new-pattern tennis-bat, having a broad upper extremity, with a handle to it, the network of the bat containing many granular particles, or nuclei.

The principal symptoms which are noticed in animals fed on this fungus, are Diarrhœa, straining, and Colic, followed by Enteritis, and, finally, death resulting in animals in which treatment was not adopted during an early stage of the disease. Suppression of the urine was noticed in most cases. Tympany, due to paralysis of the muscular coats of the intestines, was always an unfavourable symptom; so also were palpitation of the heart, muscular tremors of the body, sinking of the eyes, with dilatation of the pupil, and convulsions, which always preceded death. The duration of the disease was about twelve hours, only a few of the cases being prolonged to twenty-four hours or more, after which the prognosis was generally favourable if a relapse did not occur. That the above symptoms are due to the fungus, was proved by me in Cawnpore, by experimentally feeding ponies on grass containing it, and which succumbed to the disease in a few hours.

The only treatment I found of any avail was, in the early stages, to give preparations of ammonia (in preference, the carbonate of ammonia), followed by sulphuric acid. The ammonia was specially valuable in cases showing cardiac complications, with interference of the circulation due to plugging of the blood-vessels, seen *post-mortem*. Rice-water, linseed-tea, etc., were given freely as emollient drinks.

I may here remark that several sheep and cows belonging to natives have lately died in this station, and on inquiry I learn that the cause of death in these was "acute Diarrhœa and paralysis of the hind-quarters." I have no doubt that the cause of death here also was due to the *Puccinia graminis*, seeing that this fungus has been met with in so many bundles of grass I have now examined, which was cut in cantonment. I may mention that a similar outbreak was witnessed a couple of years ago in the Bengal Cavalry horses stationed at Cawnpore, and which I reported at the time in the VETERINARY JOURNAL of April, 1887. As I do not remember to

have seen the same train of symptoms in the horse, caused by this fungus, described in any of the veterinary works I have consulted, I send the above short notes for readers of the VETERINARY JOURNAL.

COLOTOMY.

BY S. R. HOWARD, V.S., CIRCLEVILLE, OHIO, U.S.

ON 6th of September, James Swearigen, farmer, gave us a boar pig, over four weeks old, having imperforation of the anus. It was lively and bright, notwithstanding that there was an anal tumour, which presented the appearance of an inflated bladder of pigskin. I never saw such distension.

The animal being laid on its side and held, the anus was sought for on the track of the perineal *raphé*, by the usual method of crucial incision and exploration.

No trace of rectum or imperforated anus could be found in the pelvis by the little finger or probe. Despairing of successful treatment, a blunt director was rather recklessly pushed forward into the abdominal cavity, after the withdrawal of which a sharp spirt of meconium escaped. The director was again introduced, but the previous puncture could not be discovered.

The hair was then removed from the left flank, and an incision was made about an inch long, downwards and forwards, including the peritoneum; a portion of the colon pressed very firmly against the borders of the incision, threatening to tear the incision larger.

Six or eight stitches were passed through the edges, including a snip of the intestine, which was then opened by a good-sized puncture. The flow was copious, to say the least of it.

We placed him then in a comfortable pen, from which he escaped, and was gone for a week, when he was then discovered in a corn-field about a mile away. After a fruitless chase, I gave him up as a dead pig; but, to our astonishment, a countryman returned him in a few days. The stitches were all loose, except one inferiorly. The loose ones were removed, and the border of the punctured intestine was found to be attached around the edges of the flank incision.

The creature had a cold, so milk and alcohol were exhibited. Next day he was apparently well, and has remained so ever since. He is growing very vigorous, and is in splendid condition, if not very *pretty*.

Defæcation is both voluntary and involuntary. When the former occurs the left hind limb is forcibly pointed backwards, and the usual mechanism is brought into play.

My preceptor, G. W Butler, V.S., tells me of several analogous cases, but none as favourable. This shows the endurance of some animals.

Editorial.

OPERATIONS ON THE LARYNX.

In the Journal for last July, in an article on laryngeal surgery, we referred to what we had done in operating directly upon that organ, and stated that it was no longer a *terra incognita*, but that we had found it readily accessible to the fingers and the vision of the surgeon, no less than to his surgical instruments. So long ago as 1878, we had satisfied ourselves on these points, and certainly we may lay claim to being the discoverers of this new field for operative interference; as until that time, and indeed until publication of our proceedings this year, no one had ventured to open the larynx, at least in this country, with the view of performing operations in its interior. True, the trachea had been opened at some distance from the head by Gunther and two or three other veterinarians, and the interior of the larynx was reached in that way; but so far as can be ascertained, the larynx itself was not opened, probably because most serious consequences were apprehended. Accidental fracture of the thyroid cartilage of an aged horse in 1878, and an attempt to remedy it, proved to us that there was very little danger indeed in penetrating the cavity of the larynx and manipulating its several parts, so long as ordinary care was exercised. The experience then gained engendered the hope that the morbid condition which gives rise to chronic Roaring in horses might be removed by direct operation upon the larynx itself, instead of attempting it through the trachea, as Gunther and others had done unsuccessfully. Not only this, but other serious conditions of the larynx, and even certain parts of the pharynx, could be ascertained, and dealt with surgically or medically, by the same operation; while hitherto obscure notions with regard to the physiology of the organ could be elucidated in the most satisfactory manner through the laryngeal incision.

To a large extent these hopes have been realised, and a great addition has been made to our knowledge of laryngeal physiology; while as for the pathology and surgery of the organ, a new epoch has been entered upon. With regard to operation for Roaring, much interest and comment have been excited, and the proposer has had the usual amount of acrimonious criticism from a few who do not appear to have been in any way qualified to criticise. We have been told, for instance, that there was no novelty in our mode of operating for Roaring, that it had been practised by others years ago, that the operation was absurd and contrary to all knowledge and principles, that we had failed, that we had disgraced ourselves and the profession, etc. All this puerile nonsense we could well afford to disregard, as it had no foundation whatever in fact, and was only uttered from very unworthy motives; and also because we had no interests to serve but those of the profession,

to the welfare and progress of which we have devoted our life, our energies, and our means.

Our efforts appear also to have incurred the disfavour of a surgeon who has ventured to transfer some of his attention from mankind to horses, and for something like twelve months has been endeavouring to "cure" Roaring; indeed, he announced not long ago that he had *cured* two horses. Fearing, evidently, that we might gain credit for our attempts, he subsequently (in a military journal!) published his observations and the results of his operative procedure in cases of Roaring; from which we learn that his operation is one of a very difficult and grave character, that it in no respect resembles the operation we have had practised, neither in effectiveness, simplicity, safety, nor in other important advantages, and that the supposed cures cannot be in any way regarded as cures.

We glean that Mr. Clarke's operation consists of—1st, Opening the *trachea* to ascertain whether the horse is a roarer, and inserting a tracheotomy tube; 2nd, Making a large triangular incision (6 to 8 inches) through the skin behind the jaw on the left side, reflecting the angular flap upwards, ligaturing the jugular vein in two places, and removing the intervening portion; 3rd, Cutting or tearing through the fascia to expose the side of the larynx, care being taken not to injure the parotid gland or duct, which are in close proximity; 4th, Ligaturing the laryngeal branch of the thyroid artery; 5th, Dividing the inferior constrictor muscle to the thyroid cartilage and crico-thyroid muscle; 6th, Dividing the superior laryngeal nerve, and ligaturing its accompanying artery; 7th, Disengaging the wing of the thyroid from all its attachments; 8th, Removing the arytenoid cartilage. On one occasion a portion of the thyroid cartilage was removed, which caused the framework of the larynx to fall in. On another occasion none of the thyroid was removed, and the vocal process of the arytenoid was left, a couple of sutures being passed through it, one being brought out through the thyroid, the other through the cricoid cartilage. It will thus be seen that the operation is not only a most serious mutilation, but so far as its results are concerned—even if it prevented Roaring, which is very doubtful—it might prove even worse than the morbid condition it is designed to remove. We know the functions of the superior laryngeal nerve, and these are abolished by its division; and we are also well acquainted with the effects of obliteration of a jugular vein. Only two horses affected with Roaring were operated upon; a third was supposed to be a roarer, and three horses, which were not affected in this way, were subjected to operation. Of the six horses, one died as a result of operation, and all were killed, one of the roarers after being five months at grass, the other after three and a half months. The latter was tested by being made to go round a yard (if at the Brown Institution, the space is about the dimensions of a good-sized drawing-room), and it did not make a noise. It is not mentioned how the other animal was tested, but Mr. Clarke *thinks* both animals were cured. The fact that they were not tested by severe and continued exertion—they being worn out—and which is, after

all, the only certain test, renders us very doubtful indeed as to their being cured. We may state that worn-out horses are not fit subjects to try in this way, and that we prefer horses in full vigour, and which can be subjected to a two or three miles' gallop in the open country, in order to ascertain whether operation has been beneficial. Such are the horses we have had the simple, easy (comparatively), and safe operation performed upon; for of a large number not one has died from it; and the result will shortly be placed before the profession. We may mention that the value of this method of operation has been fully shown by our friend and worthy colleague Dr. Mœller, of the Berlin Veterinary School, who has been successful in removing Roaring in twenty-two of thirty horses operated upon, and this without deaths, ligaturing veins and arteries, or dividing important nerves, as well as endangering important organs and structures. We shall hope to show still better results.

ANTHRAX IN SWINE.

BY PROFESSOR EDGAR. CROOKSHANK, M.B., KING'S COLLEGE, LONDON.

It was high time that the much-disputed point as to whether swine could be affected with Anthrax, should be finally put at rest by the Veterinary Department, Privy Council, and Professor Brown may be congratulated upon the able agent he selected to settle the matter.

Perhaps, in the dim and distant future, a bacteriologist may arise from the ranks of the veterinary profession, competent to carry out these investigations; and should we, at that remote period, still be in the land of the living, the event will cause us unmitigated joy, for it will mark a distinct forward step on our part. In the meantime, it is not too much to say that the profession has every reason to be proud of its ally, who seems destined to render it many important services.

Dr. Crookshank's paper takes us rapidly through the history of Anthrax in swine, in the shape of a short *resumé* from Fleming's "Manual of Veterinary Sanitary Science and Police"; he next gives a synopsis of several outbreaks, diagnosed and recorded by Mr. Wilson, of Berkhampstead, which are very interesting; and then he describes the various experiments carried out for the purpose of—

(*a*) Ascertaining the result of the ingestion by swine of the viscera of a bullock which had died of Anthrax.

(*b*) Ascertaining the effect of ingestion by swine of putrid offal from animals slaughtered in health or dying from causes other than Anthrax.

(*c*) Ascertaining the result of inoculation of swine with the blood of a bullock which had died of Anthrax.

(*d*) Ascertaining the result of inoculation of pigs with the blood of a guinea-pig which had died of Anthrax.

(*e*) Ascertaining the effect of inoculation of swine with a pure cultivation of the Anthrax bacillus.

(*f*) Isolating the Anthrax bacillus from an outbreak of Anthrax in swine at King's Langley.

The results were as follows—

(*a*) Anthrax was produced in swine by experimentally feeding them with Anthrax offal.

(*b*) The disease was communicated to swine by injection of the blood of a bullock which died of Anthrax.

(*c*) Anthrax was passed through the guinea-pig, and transmitted to swine by injection of blood from the spleen.

(*d*) Anthrax was produced in swine by injection of a pure cultivation of the Anthrax bacillus.

(*e*) From cases in which the disease was accidentally induced in the farm-yard, the Anthrax bacillus was isolated and Anthrax reproduced in guinea-pigs and mice by inoculation with the blood from the spleen.

(*f*) Anthrax can be communicated to young and old swine. If the disease is induced by ingestion, the tonsils are found to be ulcerated, and enormous swelling of the throat is, in such cases, a characteristic symptom.

It is also important to note that there is a rash-like discolouration of the skin, sometimes loss of power over the limbs, and a general weakness and disinclination to move; or the animal may lie helplessly on its belly and utter plaintive cries when disturbed. Dr. Crookshank further on calls attention to the fact that the spleen may be normal in size, and pale and flabby; whereas in other cases it is characteristic of Anthrax.

He states that the examination of the blood of the heart and spleen for Anthrax bacilli must be carried out with perseverance and discrimination, as they were only present in small numbers, and in some cases had given place entirely to some septic organisms.

Dr. Crookshank very justly considers this point to be very important, because it may often happen that control experiments upon guinea-pigs and mice may produce malignant œdema or other forms of septicæmia, owing to the destruction of the Anthrax bacilli by other organisms.

It has been necessary to omit the details of the experiments, but we have quoted as nearly as possible the author's words. Those of our readers who desire to make themselves more closely acquainted with the details, are referred to the Proceedings of the Pathological Section at the Annual Meeting of the British Medical Association held in Glasgow in August, 1888.

INOCULATION AND PLEURO-PNEUMONIA.

In a recent report of the local authority for the county of Perth, read at a meeting held in October, the following reference was made to a case in which inoculation had been tried for Pleuro-pneumonia at Drumkilbo: In this case thirty-two cattle were inoculated on 11th February last. Ten of these, of which one died, and nine were slaughtered previous to 19th September, were found on *post-mortem* examination free from Pleuro-pneumonia. But on the latter date the remaining twenty-two were slaughtered, and on *post-mortem* examination two of these were found to be the subjects of encysted Pleuro-pneumonia, showing that disease may exist for upwards of seven months in cattle after inoculation without discovering itself.

Colonel Stirling, of Kippendavie, in moving the adoption of the report, said that he wished to say a few words in regard to the Drumkilbo case, because, although the committee had so worded the report as to leave the general public to form their own opinion, yet while he was chairman of the local authority he felt it his duty to express his own conviction for what it was worth. At one time he was very strongly in favour of a more thorough trial of inoculation, and believed that it could be used with advantage, but the Drumkilbo case had shown most conclusively that inoculation was not to be trusted to eradicate Pleuro from the country. In the evidence submitted before the Highland and Agricultural Society they were assured of two points —first, that a diseased beast would not take inoculation; and secondly, that if it did the effect was to bring out the disease far more strongly than ever. These two contentions were absolutely knocked on the head by the result of

the Drumkilbo case. The animals there were inoculated in February, and slaughtered in September. In two of them traces of encysted Pleuro were found. If, therefore, the animals were diseased before inoculation, it was perfectly clear that the inoculation failed to discover and develop the disease. If, on the other hand, at the time of the inoculation the cattle were not diseased, it became clear that inoculation was valueless, because they must have taken the disease afterwards, and the fact remained that for many months, as could be seen by the condition of the lungs, those animals must have been diseased, while all the while the inspectors and Mr. Drummond Forbes reported them to the committee as apparently perfectly healthy. As long as any part of the diseased lung was soft, and during the whole time the process of encystment was going on, those animals were a source of disease. Therefore, to contend that, because the remaining portion, twenty animals, remained healthy it proved inoculation as of value to eradicate the disease, he held was not a good argument. He did not deny the efficiency of inoculation as a certain kind of preventive, but that was not what they wanted. They desired to eradicate the disease, which was not indigenous, from the country. In proof of the satisfactory result from the slaughtering of cattle under the recent Order, he might mention that the disease was steadily decreasing in Scotland. During the first quarter of the year there had been eighty-seven outbreaks, in the second quarter sixty-four, and thirty-six in the eleven weeks of the third.

THE IRISH VETERINARY DEPARTMENT.

After a loug period of service, Mr. Ferguson, who held the high-sounding title of Her Majesty's Veterinary Surgeon in Ireland, has been retired, and Mr. Hedley, F.R.C.V.S., has been promoted by the Irish Privy Council to the office of Chief Inspector—an office of heavy responsibility, but which he is entirely competent to assume. Mr. Prentice, M.R.C.V.S., has been appointed to the vacancy made by Mr. Hedley—that of travelling inspector.

THE VETERINARY SURGEON'S DIARY FOR 1889.

It has often occurred to us as a matter for surprise, that among the numerous diaries, visiting lists, and pocket-books issued year after year, the wants of the veterinary profession—and they are scarcely less urgent in this respect than the medical—should be unthought of or ignored. True, it is much the smallest of the professions, and naturally the commercial aspect comes into the calculation; for we hear on all sides that diaries are so much more expensive to turn out than ordinary books of the same size (and, moreover, must sell almost as soon as issued), that unless a large demand can be looked for, a considerable loss must ensue. Notwithstanding these difficulties, and others which have presented themselves from time to time, the enterprise of Messrs. Baillière, Tindall and Cox have determined them to try the venture for the coming year; and it will then be for the profession to decide whether they will accord sufficient support to meet the outlay, and thus ensure the annual publication of a work that should be to every practitioner almost as necessary as his food.

HORSE DISEASE IN BURMAH.

The *Army and Navy Gazette* says :—"We hear from Burmah that the disease *Surra*, always worst during the rains, has been again playing havoc among the cavalry horses in that country. E Troop, First Madras Lancers, has lately marched in dismounted to Meiktilla from its former post, Shamayne, leading

one horse, the sole surviving animal of two officers' chargers, sixty-one troop horses, and thirty-two grass-cutters' ponies, which were present with the troop on May 12th last, the date on which the disease broke out. F Troop has also been very unlucky in this respect, having already lost sixteen troop horses and three ponies from the same disease, and having thirteen cases of *Surra* now lingering on. The disease is absolutely incurable, so these, too, must eventually swell the death-roll. In other words, in one squadron, out of 100 horses, 89 have died within the last three months. Since the arrival of the 1st Madras Lancers in Burmah, just two years ago, the regiment has lost in all 371 horses. Considering that the average price of the Government remounts of the Madras Cavalry is 740 rupees for Walers (in Madras), and nearly that amount for Arabs and Persians, it will be seen how great the loss is. And much of it might have been avoided but for the short-sighted policy of the Government of India, in starving its veterinary staff, which is totally inadequate to the wants of the service, and consequently so overworked that proper veterinary aid is impossible."

THE HORSE-SUPPLY OF SOUTH AFRICA.

MR. NUNN, Army Veterinary Department, was sent on a special mission to South Africa, in order to study and report upon the disease known as Horse-sickness, and, during the season when that scourge did not prevail, to investigate the resources of that great country as to horse-supply, and state if any and what improvements in breeding were required. We have already published his very able and interesting reports on the first subject; we now have pleasure in presenting that on the second. It may be mentioned that Mr. Nunn travelled more than 8,000 miles during this investigation.

FROM VETERINARY SURGEON, 1ST CLASS, J. A. NUNN, ARMY VETERINARY DEPARTMENT,

To the Principal Veterinary Surgeon to the Forces.

Cape Town Castle, 15*th February*, 1888.

SIR,—In accordance with instructions conveyed in your letter marginally noted, I have the honour to forward for your information the following report as to the Horse-supply of South Africa.

Looking on the matter in the light of a source of supply for remounts for the Indian and home Armies, price obtainable, cost of transport, and, if I may use the expression, from an Imperial point of view, also in a Colonial light, as to the best steps to be taken to improve the existing animals, markets to be found, and as this report will, in all probability, pass into the hands of the civil authorities and other persons who may be ignorant of professional knowledge, and not be horsemen, I trust I may be excused if it is written more in the style of a narrative than an ordinary official report, which would have been the case had I thought that the perusal of it would be entirely confined to the military authorities.

I first started from Pietermaritzburg, in Natal, for Cape Town, on August 30th, 1887, but as the officer commanding wished to consult me relative to some matters that had arrived from England in the mail that I left in, I had to leave the ship at Port Elizabeth and return to Pietermaritzburg. I left Natal again for Cape Town on September 28th, and in Appendix A I give a table taken from my diary, showing the journeys I made and places visited, by which it will be seen that the distance travelled by me was 2,632 miles by sea, 4,542 miles by rail, and 1,664 miles by road, making a total of 8,838 miles from the date of my first leaving Pietermaritzburg.

While speaking of this matter, I must mention the kindness of the authorities of the Cape Government Railways, who provided me with a free pass over all the lines in the Colony, thereby saving me an immense amount of trouble.

The tour taken by me can be divided into three parts: 1st, through the Eastern Province and Hantain; 2nd, the Western Province; and 3rd, into Basutoland and the lower part of the Orange Free State. The routes taken and the districts I visited are shown in the sketch map, Appendix B.

By the kindness of Colonel Bailey, C.M.G., I was also allowed to inspect the horses of the Cape Mounted Rifles, at their head-quarters at King William Town, and the detachment at Palmeit Fontein, on the Orange River. These horses are small, but, for the service they are required, most useful.

Looking on South Africa as a source from which remounts could be obtained for heavy Dragoons and medium Cavalry, I am of opinion that at present only a limited number could be found; that is to say, horses that could compete side by side on their own merits with those purchased in Ireland and the Australians imported into India; although no doubt, in times of emergency, especially if the standard were somewhat relaxed, a certain number could be found suitable for light or irregular Cavalry.

I think that it is pretty well allowed, even in the Colony itself, that the Cape horse has deteriorated, and that the class of animal that was imported into India before the Mutiny has, to a great extent, died out. And my own experience agrees with this; for when I first went out to India there were a few Cape horses in the country, and certainly they were different animals from the general run I have seen in the Colony. Of course, the falling off in demand, due to the opening of the overland and Red Sea route to India, has had much to do with it; but I think that the actual cause of this deterioration is in the Colony itself, many farmers having abandoned horse-breeding for ostriches, merino sheep, and angora goats, which some years ago paid very much better. But the class of stallion imported of late years is, in my opinion, the chief factor.

There has been a desire to breed race-horses, and a number of thoroughbreds have been imported from England. Now it is no good disguising the fact that, as compared with New Zealand and the Australian Colonies, the Cape is a poor country, and that importers could only in a very few instances, "which could be counted on the fingers of one hand," afford to pay for a really first-class thoroughbred; by which I mean an animal that would be likely to become a valuable sire at home; and consequently, as a fashionable pedigree was insisted on, other qualities, such as bone-power, etc., were all sacrificed for blood, and a very inferior animal obtained. In the company they met with in the Colony, and in short events on the flat, these animals were successful, no doubt, so far as their racing careers were concerned, and being well known on the turf, they were sought after for breeding purposes. In many cases some of their stock were also successful; but the fact was quite overlooked that a brilliant turf record is no guarantee of what a horse will do at the stud, especially for breeding useful hacks and harness horses; but very often it is quite the reverse, and this is the mistake that has been fallen into. To my mind, the system of making most of the big races handicaps has a great deal to answer for, as it most effectually puts a stop to any inducement to import a good horse; for what object is there in doing so with the knowledge that, after winning one or two races, a really good horse will be handicapped down to the level of a £50 screw that, although he may with a feather weight run away with a five or six furlong race, is incapable of carrying a man's boots over a potatoe-trench? I would suggest that something be done to remedy such a state of affairs, by making a few of the more important races either weight for age, with penalties and allowances, or else

fixing the maximum and minimum weights to be carried. In breeding race-horses, especially for the South African turf, a fact that has been overlooked is that for one that turns out well many will be utterly useless for any purpose whatsoever, being merely blood weeds, and this is a class of animal that is now only too plentiful in the Colony; many of the entries, solely from their pedigrees, finding their way as stallions into the more remote parts and amongst the smaller farmers, the fillies being also in their turn used for breeding purposes. Before leaving this subject, I must remark on the want of judgment that is shown in many cases in the selection of mares. I have seen, in many cases, all that are bred on a farm running loose in a mob together, the stallion being turned adrift amongst them, no effort being made to cast or get rid of the unlikely ones. The droughts that the country is at times subjected to is, of course, very detrimental to young stock, and the small and stunted growth of many of the South African horses is undoubtedly due to this cause, the pasturage being burned up, and the mares and foals being half starved. The natural remedy for this state of things is, of course, to feed artificially with oats, hay, forage, etc.; but this is expensive, and I believe not practicable. Whether this is the case or not I am not sufficiently experienced, nor am I in a position, to determine; but to a stranger in the Colony there is a fact that strikes one as being singular—viz., that whereas on one hand I have been told, when it has been suggested that mares and young stock should be fed, that it cannot be done, as it is too expensive; on the other, almost universal complaints are made that it is not worth while growing crops, as the price is so low that it does not pay; so much so that, on my remarking to one farmer on the splendid crops he had, he began lamenting that they were so good, as it would keep the price of produce down. In times of scarcity, and in fact always, it is customary to allow the foals to run until they are eighteen months or two years old, then take them up and feed those it is intended to sell or work. Of course, if there is any grazing this plan works well enough; but if there is not, by the time the young animal is brought in his growth is permanently stunted by a course of starvation. Under these circumstances, supposing only a year's artificial feeding can be afforded, would it not be better to give it to the foal while young, and then when he had a certain amount of stamina and power of resistance to let him take his chance, than to wait until the damage is done, and then attempt to repair it? These droughts and the want of natural grass are a great obstacle, and one that I am afraid will seriously interfere with South Africa competing in the Indian horse trade with Australia; but, however, the whole country has not these drawbacks. As to the geological and physical features and conformation of South Africa, it is not necessary for me again to speak, as I have entered into it at some length in a former report I forwarded to you on Horse-sickness in Natal. Suffice it to say that in the southern and western portions of the Colony, especially the Piequetburg district, about Saldhana Bay, the Great Berg River, and in the Caledon and Swellendam districts, in many places there is excellent grazing. The same applies to the eastern frontier about King William Town and the Kei River; though unfortunately, being somewhat low-lying and to the east, Horse-sickness is at times prevalent; but in the places mentioned on the West Coast such is not the case, which fact I have previously explained in my report on Horse-sickness in Natal, by the two prevailing currents, the Antarctic and Mozambique, meeting at the Cape. Basutoland should be a first-rate horse-breeding country, lying, as it does, at an elevation of some 4,000 to 5,000 feet above the sea, with a temperate climate in which Horse-sickness is unknown; droughts are not very common, and the hills are covered with good grass; in fact, the ponies of Basutoland are famous through South Africa, but of these I have to speak further on.

Of the strength and endurance of the South African horses there is no question, they being capable of performing immensely long journeys over very bad roads in hot weather, and on nothing but what they can pick up on the Veldt, or a little oat-hay forage. They are also wonderfully good-tempered and quiet; even entire horses can be left tied up with a lot of others with safety. They are, as a rule, very sound; splints are the most common form of lameness, spavins and ringbones being comparatively rare. This is altogether the reverse of my experience in India, where these two latter, with curbs, are very common; but in that country it can be accounted for by the sharp bits the natives ride with, and the iron cross hobbles that are used. Thickening of the inferior metacarpal ligament and sheaths of the back tendons is very common, from the practice of knee-haltering, but I have seldom seen it cause lameness. The hoofs are remarkably sound, a good many persons working their horses for long distances over rough ground without shoes. In fact, a Basuto pony is never shod at all. Diseases of the respiratory system are almost unknown; in fact, I have only seen two roarers in South Africa. I have, however, noticed a number of cases of cataract, both corneal and lenticular, which I attribute to ophthalmia, caused by the heat glare, and above all, the flies in the summer.

These are the good points of the South African horse, but I must now give the reverse side of the picture.

He is small and stunted in growth, generally about 14·2 to 14·3 hands high, only a few being much taller; deficient in bone, few, if any, measuring $7\frac{3}{4}$ inches below the knee; pinned in at the elbows; good shoulders and forehand; narrow chest, very badly coupled and ribbed up, with bad, drooping quarters, badly developed muscles of the croup and thighs, split up behind, with crooked hind legs; the hocks being very far back, or to use a slang, but somewhat expressive term, "in the next parish to the body." In fact, to sum up the whole matter, the South African horse is, although small, good before, but bad behind the saddle. It may be perhaps asked, If the breed has so fallen off in point of size and weight-carrying powers, how is it that from a commercial point of view no steps have been taken to rectify it? This is easily answered. As the population of South Africa is, as a rule, not horsemen, that is to say, they do not generally ride, but perform long journeys in Cape carts, and, as I need hardly point out, a much greater weight can be conveyed by draught than in the saddle, the present small, hardy animal is found to answer the purposes required of him. Another reason why larger animals are not bred, such as are obtained in India from Australia, is that most of the farm work, such as ploughing, drawing waggons, etc., is all done by bullocks or mules; and as big draught-horses are not wanted, and eat more than the smaller description, there has been but little inducement to go in for increased size.

As one of the chief causes of deterioration of the South African horse is the inferior light-blood breeds that are imported as stallions, one of the first steps I consider necessary is to get proper sires. In my opinion, there is no horse to equal a good English thoroughbred, but in using the word thoroughbred I do so advisedly. I do not mean that any clean-bred horse that is in the stud-book should be used, no matter how well he is bred. The sort of horse I mean is a clean-bred one, well ribbed up, 15·3 or 16 hands high, with good shoulders, back, and loins; strong, well-developed hindquarters; good girth of bone, nothing that measures less than $7\frac{3}{4}$ or 8 inches below the knee being used, and with big hocks well under him; in short, a thoroughbred that would be able to carry a 13-stone man to hounds in a deep plough country like the Vale of White Horse or Blackmoor Vale. This class of animal is, however, very scarce, and is what every one is looking for, and it would not be a matter of paying in hundreds, but thousands of pounds, and even

then he would be difficult to find. I am quite aware that many will not agree with me in my preference for the thoroughbred, and probably I shall have their failure in the Indian studs pointed out to me; but with all due deference, I beg most respectfully to state that in my opinion the thoroughbreds sent out to India were, with a few exceptions, not by any means first-class animals. As the price is prohibitive, and the thoroughbred horse I have described out of the question—for I would most strongly urge that an inferior class of animal should not be imported—the sort of sire I should use would be a three-parts bred Irish or Yorkshire hunter, a Cleveland bay or Norfolk trotter, and of this last I shall have to speak more fully. As I have before said, if money were no object, and he could be obtained, I would use a thoroughbred; but as it is a consideration, then get an animal with size, power, bone, and substance, and as much breeding as can be afforded, but do not sink all other considerations to pedigree, which has unfortunately been done. The sort of horse that would best fulfil these conditions would, I think, be more easily obtained in Ireland than elsewhere, unless, indeed, he could be found in Australia or New Zealand. This is a question I am not in a position to answer, never having been in either of those Colonies; but from the class of Waler I have seen imported into India, I am strongly inclined to think that the kind of sire required for South Africa is to be found there; but this is a matter I must leave to others. I think that there would not be the slightest danger in introducing three-parts bred horses, for whatever her bad qualities may be, the South African mare cannot be said to be wanting in breeding—on the contrary, there is generally too much of it.

After the Zulu war a number of English mares were sold in the Colony, and used for breeding purposes; the first year few held to the horse and were barren, and this gave rise to an absurd notion in the Colony that the mares in the British Army were all spayed. This experience quite confirms what I observed some years ago in the north of India, where cast horses from the British Cavalry and Artillery were handed over to the department of horse-breeding operations for sale to breeders in the country. But few proved in foal the first year they were put to the horse, but in the second and third year most of them did. This was particularly noticeable with animals over fourteen years, and was mentioned, if I recollect right, in the General Superintendent of Horse-breeding in India's Report for the year 1883-84. From inquiries I have made, I find that the same has taken place in South Africa, and it stands to reason that if a animal that has been fed, stabled, and look well after for eight or ten years is suddenly turned loose in the Veldt to pick up her own living, such an amount of constitutional disturbance will take place as to upset some of the functions of the body; and that of generation being the most delicate and complex, is the first to show this condition of things. The prejudice against these animals, or, as they are generally known, "Lancer mares," has been overcome, and they are now greatly prized, and one has only to look at the foals to see the difference between them and those of the Colonial mares.

If they can be obtained, good upstanding Clevelands would be a good class of sire, but then they also are difficult to obtain and expensive; moreover, in my experience, although this is a class of horse I have not had very much to do with, he is rather inclined to be long in the barrel, slack ribbed up, and to run to leg; and these are points that should be carefully avoided. However, if Clevelands of the proper stamp can be found, I see no reason why they should not prove useful sires, and "nick" well with the Colonial mare, especially for breeding harness-horses.

The Norfolk trotter, or roadster, is an animal that requires some remarks, and I would most strongly urge the necessity of exercising the greatest care

in his selection, as there are Norfolk trotters and Norfolk trotters, some very good, and others equally bad. Now the pure-bred, clean-limbed Norfolk trotter is an excellent horse, and would, I think, be an excellent sort of stallion for South Africa; and moreover, there is the advantage of his not being of so prohibitive a price as the thoroughbred. He is a thick-set cobby horse, the only disadvantage being, perhaps, that he does not stand very high; but taking all things into consideration, this can be passed over, at all events for the first or second generation, as he would certainly give to his stock the bone and size that they are now so lamentably deficient in; but I would most strongly object to the heavy, hairy-heeled Norfolk trotters, many of which are seen that are probably by a Norfolk trotter out of a cart-mare. I have had some experience with this class of horse in India, and the result was anything but satisfactory. It was found that the cross was too violent, the stock being big-carcassed animals, with the body of the sire and only the limbs of the dam to support it; and this is certainly what should be avoided.

It has been suggested by some farmers that the Clydesdale and Shire draught-horse should be imported, but this I cannot agree with, as I am certain that the same result would be seen in their stock as I observed in the under-bred Norfolk trotter in India, for the Cape mare in many respects resembles the Northern Indian one. Furthermore, there would, with the exception of a few places like the docks at Cape Town and Port Elizabeth, be no use for them, as the work on farms is done by bullocks; and if the colts have to be turned out, South African fashion, on to the Veldt to pick up their own living, they would simply starve, as such big animals require feeding.

While on the question of bullocks working on horse farms, I cannot help remarking what to a stranger seems a singular waste of power, in seeing a mob of brood mares running wild and unbroken, and the ground being tilled by oxen or mules. Surely the mares could be broken in, and although not worked hard, they might do enough to earn their own living, as is done in England and Ireland.

One or two Pecheron and Norman stallions have been imported, and in certain quarters have found favour. This is a class of horse I do not personally know much about, but I should be inclined to think that they would be phlegmatic and soft. They are certainly largely used in the omnibuses in Paris, and the heavy Dragoons, Cuirassiers, and Artillery in the French army are mounted on them; but some were imported several years ago for the London tramways, and did not give satisfaction. At all events, extreme care should be taken, as I see by a late number of a professional paper that in America Equine Syphilis, or Maladie du Coït, has been introduced by some Pecheron stallions, and is spreading rapidly. This disease is up to the present unknown in England or South Africa, but if care be not taken there is no knowing when it may be; and this is a matter that I think it would be most advisable for the Cape Government to give some attention to, otherwise a new disease may be added to the already too numerous list of those known in South Africa.

A sum of money has been voted by the Cape Parliament, for the purpose of procuring stallions to be placed out in the country, and this is certainly a step in the right direction; for in a poor Colony like this, unless the Government steps in and lends a hand, the breed will go on from bad to worse. If properly worked and sufficient time is given, the scheme, I have no hesitation in saying, will be a success; but it cannot be done in a day, and it is absurd to expect that a year or so will obliterate the effects of long years of neglect. Moreover, politics are somewhat uncertain in the Colony, and it remains to be seen whether a succeeding Parliament will grant money to keep the scheme

going, or whether it will be abolished. If, however, the stallions are kept up, I would suggest their being utilised somewhat on the plan of the horse-breeding operations in India. They might be placed in charge of some official of any of the existing agricultural societies in the Colony, who would take an interest in the matter. A most important point, I think, in making them a success, is that their services should only be allowed to selected mares, and that the number be limited. If any inferior mare is served, the colt turning out not to the satisfaction of the owner, the horse will be blamed and get a bad name, as no man will admit his own animal is bad, and every one, especially the more ignorant portion of the population, will expect all colts by the Government horses to be superlative in quality. The persons who, I think, should be more particularly encouraged to use the Government horses are the small farmers, men who own one or two mares. These are the people who can make horse-breeding pay, for one or two colts running about their farms pick up their own living, and practically cost nothing. If they die or go wrong there is no loss, and if they turn out well whatever they fetch is clear profit. This class of farmer is usually somewhat ignorant; he will not go far to look for a horse to put his mare to, neither will he pay much of a fee, and the probabilities are that he puts a fairly good mare to the first inferior brute he comes across, of which there is no lack in the country; whereas if he could get the services of a Government horse for nothing, or for a nominal sum, and knew where he could be found, there would be more chance of a good foal being born. For this reason I think that, at all events at first, till they were well known, the services of the Government horses should be given free; afterwards, when the system got on a sound footing, a fee might be charged. Of the large farmers and magnates of the land I do not speak; they are, or ought to be, in a position to help themselves without seeking Government aid, which at present is limited, and should be reserved, as I have pointed out, for their poorer brethren. I would point out a grievous mistake made by many farmers, in keeping their stallions perpetually shut up. No animal can exercise his proper functions when not sufficiently exercised; and yet I have seen horses kept shut up in a dark stable and never let out, except when they covered mares, from week's end to week's end, deformed feet and a state of obesity more fit for a prize bullock than a horse being the result.

If the Indian or Imperial Government intends to obtain remounts from South Africa, it will be absolutely necessary to purchase them on the spot, at all events for some time to come, as in the present state of things it would be simply impossible to get any one to buy and bring them to Calcutta, as the Australian dealers do. Few people have the capital, and the natural apathy of the Dutch population would prevent their trusting their animals to an agent for sale in such, to them, an unknown country as India. In the event of this being done a farm should be obtained to form a depôt in which the horses could be kept until a cargo for shipment was ready, as they would have to be picked up about the country. I would recommend somewhere in the Western District, on the sea-coast to the north, in the vicinity of Saldhana Bay, or Malmsbury, as a suitable spot. The reason I suggest this locality is that Cape Town is really the only port in the Colony where young unbroken horses could be shipped with safety, the docks giving accommodation for large ships alongside the quay. All the other ports—East London, Port Elizabeth, Port Alfred, and Durban—are open roadsteads, in which ships lie in the offing, and cargo is brought off in lighters. I need hardly point out the risks, expense, and trouble that this would occur with young animals, especially in bad weather. In fact, when the wind is blowing from the south, which it sometimes does for days together, shipment would be impossible, leaving out all risks of accidents; while the cost of demurrage of transport ships and

delay of animals at the port would be very great, and for this reason alone the depôt should be near Cape Town. Another reason is that the Malmsbury district and thereabouts is the centre of the grain-growing district of the Cape, and oat hay, which is what horses are fed on in South Africa, is much cheaper there. A third, and a very weighty reason is that this part is never visited by Horse-sickness, from reasons that I have given in my report on the nature and causes of that disease in Natal. The drawback to this locality is that down on the sea-coast, at all events, there is a scarcity of water; but inland, being watered by the Burg River, this is not the case. The distance from Cape Town is not very great, the town of Malmsbury being, as the crow flies, about forty miles, and this distance could easily be travelled by horses when a cargo was ready for shipment. This is merely a rough outline of a remount depôt; and I have not gone further into the matter, as I do not think that such an establishment will ever be formed, neither do I think it would be justified so long as private individuals will import horses at their own risk into India and sell them there; and even were the Indian Government willing to incur the expense, the money would be better laid out in Australia, where horses are, than in South Africa, where it will be a matter of some years before they can be obtained in quantities. In the case of the Imperial Government, I consider that any money expended for this purpose would be very much better employed in encouraging horse-breeding at home, as in Ireland or Yorkshire. As such an establishment would at present be absolutely necessary in order to procure remounts from South Africa—for, as I have before said, I do not think any dealer or private individual in the country would ship horses to India at his own risk, as the Australians do—and as it would altogether be for the benefit and convenience of the Colony, I think that in the event of its being formed it should be paid for by the Colonial Government, otherwise it would be giving an unfair advantage to South Africa over Australia and New Zealand.

In saying that no one would ship horses at his own risk from South Africa I do so advisedly, for a cargo of horses, about 150 in number, was shipped from Port Elizabeth in the s.s. *Clan Gordon* for Calcutta, in the month of November, by a private individual. I did not, unfortunately, see them myself, as I did not hear of the matter until too late, and I was at the time away in a remote part of the country; but from what I can gather, they were inferior animals, and should by no means be taken as representative types of what, even at present, can be found in the Colony.

Although the Cape horse has fallen off, I cannot speak too highly of the mules, and if horse-breeding had been as carefully attended to there would be but little to complain of. Some of the teams bringing loads of forage into Cape Town are magnificent animals, standing 14·2 hands or thereabouts. I could not find out that any particular donkey stallion is used, although I saw several Spanish ones; but the country donkeys are fine animals, and I suspect that they have a strong strain of Arab or Persian blood in them, that has filtered down from the Mohammedan country about Zanzibar and Eastern Africa. In the event of any attempt being made at improvement, I would suggest that the black Neapolitan donkey be tried. There were a number of them in the horse-breeding operations in the Punjaub, and they turned out a great success; but the Indian type of mule is different from the South African, being used for pack, not for draught purposes; in fact, the difficulty out there was to breed them small enough. Although I do not think that at present many Cavalry remounts could be obtained from the Cape, and the farmers say that horse-breeding does not pay them, still there is no reason why, if properly gone about, it should not. Undoubtedly, there is no demand for the inferior light breeds that swarm over the country. It would be a wonder if there were; but for a superior class of animal, that would compete with the Australians, there is at

present more than a sufficient demand in the Colony itself. A gentleman in Cape Town told me that he wanted a pair of harness-horses, 15·3 high, to draw a big barouche, and was willing to pay about £100. He was not very particular, and he had been more than six months looking for them, and could not find them. Another, at Kimberley, wanted a horse up to thirteen stone to carry him out coursing, and although willing to pay £60, or £70, could not find one. I could cite numerous other instances of people who have asked me in the course of my travels to try and find really first-class horses for them, price being no object; so this shows there is still a market open.

If the discoveries of gold in the Transvaal and elsewhere continue—and there is every likelihood of their doing so—the demand for horses will increase, and the Colony is the place it should be supplied from; and as at present feathers, wool, mohair, and grain are at a very low price, I do not see why horse-breeding, if properly conducted on ordinary common-sense principles, should not be a paying concern; so that, far from having to send to Calcutta, Madras, and elsewhere to find a market, there is a ready sale, which will increase, for good animals in the Colony itself. One thing is certain, that if it is worth while keeping up the herds of inferior animals I have seen on some farms, it would be more worth improving them, for it costs no more to breed a good foal than a bad one, and I maintain that it would pay better to keep five good mares and foals, and look after them, than twenty of an inferior sort.

In this report I have not made any mention of the horses of the Orange Free State and Natal, as although I have been some months in the latter Colony, my experiments and researches into the nature of South African Horse-sickness, particularly the bacteriology of it, have occupied all my time; and as you know, bacteriological work requires unremitting care and attention, and I have hardly been able to leave the town of Pietermaritzburg I trust, however, before I leave the Colony, to have an opportunity of visiting the Orange Free State, especially the Harrismith District, and, if so. will submit a supplementary report to you.

In the foregoing remarks I have confined myself to the class of horse from which remounts for Heavy and Medium Cavalry could be obtained. For Mounted Infantry, Mounted Rifles, and other such-like corps plenty of good servicable cobs and ponies, 14 to 14·2, can be obtained, especially in Basutoland, and it was for the purpose of seeing this class of animal that I visited that country.

Of the endurance and activity of these animals I cannot speak too highly. They seldom or ever get anything more than they can pick up on the Veldt, and yet they commonly do journeys of 60 and 80 miles in the day, and this they will do carrying 13 or 14 stone. They are wonderfully sound, and are seldom if ever shod, although some of the tracks and paths are very stony and rough. A peculiarity of the Basutos is that they will rarely sell a young horse, all that I saw for sale being aged. The reason of this is that they are running loose on the mountains, and are not caught till seven or eight, their ages being reckoned from the day they begin to work.

Without any intention of fraud, I have had ponies said to be three and four years old brought to me that really were eight or ten, the owner counting from the date he began to work them. It really does not much matter if these ponies are aged, as they will work for years. A peculiarity I noticed is that by the marks of the teeth between six and eight years they showed to be younger than they really are, the teeth being worn down. I attribute this to the quantity of sand that is in the grass, and the rough nature of the herbage they have to tear off the ground.

The matter of the cost of transport to India and England, and the price horses could be obtained for, I have not given in this report. I have been

promised some returns and statistics that have not yet come to hand, but when they do, which I hope will be in a few days, I will submit them in a separate report.

I trust that this report will be taken in good part, as in places I have not painted things in very glowing colours; but as the instructions I received were to inquire into the horse question of South Africa generally, it would have been useless not to have pointed out where faults lay and mistakes are made, or by passing lightly over them.

That horses could be bred in South Africa as good as in any part of the world, I have not the slightest doubt. In fact, it is not a problem that requires much demonstration, for they were so once, and why should they not again? If they are not, it will not be the country or the climate that is to blame; and even as it is, as I have said before, there are good, suitable horses in the country, and in times of emergency a certain number could be obtained.

In conclusion, I must convey my thanks to all officials and others I had to come in contact with, for their efforts to forward this inquiry by every means in their power, and particularly to D. Hutcheon, Esq., Colonial Veterinary Surgeon, who accompanied me round the Midland District, and by his advice and knowledge of the country I obtained information which I otherwise should not have got.

HORSES REQUIRED FOR THE INDIAN ARMY.*

By J. H. B. Hallen, M.R.C.S., M.R.C.V.S., General Superintendent, Horse-Breeding Department.

The several classes of horses required for the Indian Army are as follows:—

Horse Artillery.
Field Artillery.
British Cavalry.
Native Cavalry.

2. The horses for the Artillery and British Cavalry are the property of the State, and are mostly obtained from Australia, the Persian Gulf, and the Cape of Good Hope. A few bred and reared in India are also bought for these branches of the service.

3. The organisation of the Bengal and Punjab Native Cavalry is on the Silladar system and the men are mounted on Indian-bred horses, and a few of foreign breeds; these are the property of the men of the regiments, not of Government.

4. The Madras Native Cavalry are mounted by the State on horses from the Persian Gulf and Northern India, and some Indian-bred horses. The Bombay Native Cavalry are on the Silladar system, and the horses are the property of the men of the several regiments; these mostly come from the Persian Gulf, but there are also a few of country-bred stock.

5. The stamp of horses required for the different branches as above noted may be described as follows:—

For Horse Artillery.—Well-bred large-jointed, good-limbed, active horses, from 15 hands 1 inch to 16 hands 1 inch in height.

For Field Artillery.—A similar stamp of horse, but of a more powerful build, yet well bred, though not necessarily showing so much action and speed as the Horse Artillery horse.

For British Cavalry.—Well-bred hunter or hackney-like horse, from 15 to

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* A lecture delivered at a meeting at Simla, on August 25th, the Commander-in-Chief, Sir Frederick Roberts, in the Chair.

15 hands 3 inches, possessing good shoulders and action, with strong back, loins, and chest, large-sized bone of joints and limbs, and able to carry a heavy weight, and to move rapidly under that weight over ordinary cross-country ground.

For Native Cavalry.—Much the same stamp of horse as that described for British Cavalry, but of smaller dimensions and build, well-bred, from 14 hands 1 inch to 15 hands 1 inch in height, and possessing much activity.

6. It may be in all truth stated that the Indian Artillery and Cavalry are remarkably well horsed; indeed, it may be added that their horses will compare favourably, if not excel, the horses in any other army in the world, as being fit and able to do their work in all extremes of climate from the temperature of tropical heat to that of freezing point. They have been tested in late campaigns, and results justifying the statement now recorded.

7. But the weak points of the remounting of the Indian armies consist in the present system of importing the greater part of the horses from other countries above noted for the requirements of British Cavalry and Artillery, and Madras and Bombay Native Cavalry.

8. It is evident that for political reasons, all the horses required for war purposes should be obtainable within Indian limits, and on financial and revenue grounds the money spent in purchasing the horses should be distributed among the agriculturists and horse breeders of India, and thus the encouraging, fostering, and developing of horse breeding as an agricultural industry would be in a marked and practical manner fully carried out.

9. The Bengal Stud Department which existed from 1794 to 1876, and the Bombay Stud Department, which was in force a few years (between 1830 and 1842, I believe) failed to supply the number and stamp of horses required for the army, and the present Horse Breeding Department does not yield a sufficient number of horses for army wants, beyond supplying an improved stamp for Bengal and Punjab Native Cavalry, and as yet only a few for British Cavalry and Artillery.

10. The principles laid down for the working of the Horse Breeding Department, when it was inaugurated in 1876, by the Imperial Government, were described by me in a paper I had the honour of reading at this Institution in May, 1887.

11. Briefly, I will here recapitulate that the Government supplies the best stallions available, and of breeds considered suitable for country-bred mares, the property of agriculturists in the North-Western Provinces, Punjab and Bombay horse breeding districts. The mares have to be inspected by the veterinary surgeons, who form the *personnel* of the Department, and those mares approved are branded in proof of their being pronounced eligible for being mated with the Government sires. No covering fees are levied, and no lien on the produce is held by the Government; but the brand denotes that a promise is made by Government that the services of Government stallions should be available for the mares, and the owners on their part agree to bring their branded mares to Government sires. In addition the Imperial Government grant annually Rs. 20,000 in prizes at horse fairs and shows for the best of stock got by Government stallions out of branded mares; and at some of these exhibitions additional awards are provided from moneys locally subscribed.

12. Government purchase the produce in the open market like any ordinary buyer.

13. The result, after twelve years' experience of the working of the Department, is that the stamp generally of horse stock in Northern India has much improved, and the Bengal and Punjab Native Cavalry are now mounted on superior horses which have done work in a satisfactory manner, also that the

few country-bred horses now in the ranks of British Cavalry and Artillery are favourably reported on.

14. The numbers required for Native Cavalry, in Northern India, and Mounted Police are obtainable in the districts and markets; but the number purchased for British services are so limited as to necessitate the purchasing of Australian and Persian Gulf horses, also during the past year a few Cape horses, to remount those branches of the service.

15. It will be now as well to give the number of horses required on the average annually for the several services of the different armies in India, and the numbers may be accepted in the aggregate, as follows:—

For Horse Artillery	232
„ Field do.	248
„ British Cavalry	462
„ Bengal and Punjab Native Cavalry	1,200
„ Madras Native Cavalry	282
„ Bombay Native Cavalry	400
Total	2,824

16. The requirements of remounts for the levies of native states are not precisely known, but may be noted as considerable, inasmuch as agents from the states are to be found at every horse fair and show. Moreover, European and native dealers are regular purchasers of horse stock at all ages, and at prices from the highest to the lowest figures of each, at all fairs and shows and in breeding districts. The animals so purchased are re-sold in all parts of India, at Calcutta, and in most large stations.

17. The demand is greater than the supply, and the improvement of the classes of the stock in Government breeding districts has caused native states to seek for most of the horses they require in those districts, as horse breeding in their own states remains limited, and not equal to affording sufficient produce for their own wants.

18. The number of stallions allowed by the Imperial Government in Northern India is limited to 300, and the registered number of approved and branded mares was on the 31st March last 14,827.

19. In the Bombay Presidency there are at present 103 horse and pony stallions—59 horse, and 44 pony—and of branded mares 4,761 for horse and 5,212 for pony stallions. Of the branded horse mares in India, viz., 19,588, it may be proximately taken one-half visit the stallions annually, and of these say one half yield produce, thus it may be calculated that 4,184 young horse stock are born annually; and of these probably 600 do not reach maturity, so about 3,584 may be considered as the probable number of country-bred horse stock by Government stallions available in the annual Indian markets. Of these we have evidence that about 1,500 are purchased chiefly by the Native Cavalry of the Indian Army, leaving a balance of 2,084 absorbed by the Government police, native states, and the general public.

20. As the supply is not found equal to the demand for the British Cavalry and Artillery, and Madras and Bombay Native Cavalry, the inference is that there is ample room for the extension of horse breeding, and to effect this a greater number of sires and dams are required. The latter will probably become available in proportion to the number of sires at hand; and these should be of a class and stamp found by practical experience most suitable for producing useful stock, and of the kind that will realise a good price, a paying price to the breeder and rearer. If breeding be proved remunerative it will surely develop.

21. As the Government may be considered to be the largest purchaser in

the market, and as a rule, but not always, may be said to give the highest prices, so will it be as well to briefly refer again to the description of the several kinds of horses above shown as required for the army, and they may be summarily described to be as follows:—

For horse artillery, powerful, well-bred, large-jointed, good-boned and limbed; to measure not less than 8 inches under the knee, from 15 hands to 16 hands 1 inch in height, able to carry 15 stone, and draw $6\frac{1}{2}$ to $8\frac{1}{2}$ cwts.; to have good action and speed, and to weigh from 8 to 10 cwts.

For field artillery and ammunition columns, horses of a similar stamp and height as those required for horse artillery; but of greater power and larger bone, though not so active and speedy, and of weight from 9 to 10 cwts.

For British cavalry, the hunter-like, cross-country horse type, well bred and with good action, powerful in back and loins, and large enough in bone of joints and leg to carry from 17 to 18 stone across country; in height to be from 15 hands to 15 hands 3 inches, to measure not less than 8 inches under the knee, and to be not less than $8\frac{1}{2}$ cwts. in weight.

For native cavalry, of a similar class as that described for British cavalry, and capable of similar work, carrying from 15 to 16 stone, to measure from $7\frac{1}{2}$ to 8 inches under the knee; in height from 14 hands 1 inch upwards, and in weight from 7 to 8 cwts.

22. As we desire to obtain the above classes of army horses from the indigenous and improved mares found in the Indian breeding districts, a description of these mares is requisite.

23. The majority of country-bred mares of India may be said to range in height from 13 hands 2 inches to 14 hands 2 inches, and some few are found as high as 15 hands, and in weight from 6 to 8 cwts.

24. They are as a rule remarkably well bred, rather light in barrel, not evenly put together, often of an angular and ragged appearance, with small but steel-like bone of joints and limbs, measuring from $6\frac{1}{4}$ to $7\frac{1}{4}$ inches under the knee, at the top of the shank bone. They have wonderful powers of endurance under either tropical sun heat or intense cold; with a light weight say from 10 to 12 stones in saddle, or light draught; and after the hardest day's work are never off their feed, but always ready for it; moreover, they will continue doing work on the scantiest of food.

25. In the improved breeds obtained from these mares by Government sires, we have increased size in bulk and more bone of limbs, greater weight carrying and draught power, and still we find the powers of endurance equal to army service work.

26. We have therefore in the indigenous and improved mares a grand structure for engrafting more power and size. Indeed, we could not desire a more suitable basis to work on, in improving the breed so as to render the produce from it more generally suited for greater weight carrying and pulling powers.

27. The important question is how to carry out this alteration and development in conformation, size, and power by a safe and practical mode of action; *i.e.*, we desire to obtain larger and more powerful stock from this under-sized, but in every other respect, as regards general utility work, high bred and lasting tropical horse stock.

28. Granted, if we kept the breed intact, by liberal feeding we could gradually obtain development in size and power; but this would require generations to effect, and more time to bring about the even conformation found associated with improved types.

29. The axiom that the sire has more influence in the production of outward conformation and limbs, and the mares in creating the vital organs of the produce is proved sound daily in horse and mule-breeding in India.

It may therefore be accepted that the using of sires able to impart to the

stock of country mares more substance and size without appreciable loss of enduring powers is the only plan to adopt with the view of creating in India a larger and still well-bred and more powerful and "general utility" horse.

30. This change in conformation of body and limb must not be expected in one or even two generations, but should be carried out gradually, by using at first a stallion not too large or weighty compared to the mare, and at every succeeding generation of enlarged mare stock, using horses of larger bulk. I am inclined to believe it better for the dam to be larger, more bulky than the sire, but I have to make recommendations how to act with dams smaller than the stallions.

31. In time, by judicious mating with development therefrom, we may in India secure dam stock of a size to allow of it being served by stallions of smaller dimensions. Again, the stallions employed must be pure of breed, of good constitutions, hardy, and devoid of hereditary diseases of limbs.

(*To be continued.*)

Reviews.

A Text-book of Physiology. Vol. I. By J. G. McKendrick, M.D., LL.D., F.R.S. (Glasgow: James Maclehose and Sons. 1888.)

Physiology is making such rapid advances that, in order to keep up with its developments, the practitioner of medicine, human or animal, must either peruse in a regular and constant manner the periodicals specially devoted to a record of these, or provide himself at brief intervals with one of the new text-books, or new editions of those already existing, with which we are favoured by the best authorities on the subject. It is, we hope, needless to dwell on the importance of this fascinating science to successful medical practice; it is nowadays all-important, for without it no satisfactory progress can be made in the knowledge of morbid processes or clinical medicine. To the veterinary surgeon it would seem to be even more necessary than it is to the surgeon or physician of mankind, and the more thoroughly he comprehends the principles and facts which the physiologist lays before him, so the more profitable to himself and his patients—not to mention the owners of these—will be his services.

For the student, anatomy and physiology constitute the foundation of his studies, surgical, pathological, and therapeutical knowledge being built upon them; and the more widely and firmly the foundation is laid, so the more serviceable and durable will be the superstructure.

Though only the first volume of Dr. McKendrick's work is as yet issued, we are satisfied that, when completed, no better book on the subject could be in the hands of the veterinary practitioner or student. The author occupies the highest position as a physiologist and a lecturer on that science, which he represents in the University of Glasgow. We may also add, as an additional recommendation to his reception by the profession, if such be necessary, that he was for some time lecturer on physiology at the Dick College, Edinburgh, and he is now an examiner on this subject for the Royal College of Veterinary Surgeons.

The book gives what was promised, an account of methods and

results; and so far as general physiology is concerned—and beyond which the present volume does not carry us—the account is complete, clear, and most instructive, as it gives us the main facts and principles of physiology in a very attractive form, morphologically, chemically, and physically. We shall look out for the appearance of the second volume with much interest, as we anticipate the author's handling of the special physiology of organs will be all that can be desired. For the present volume we have nothing but praise and commendation, text and illustrations being alike admirable.

HYDROPHOBIA: A REVIEW OF PASTEUR'S TREATMENT. By W. COLLIER, M.A., M.D., Cantab., M.R.C.P. (London: H. K. Lewis. 1888.)

In a pamphlet of thirty-one pages Dr. Collier deals in a summary manner with the most salient of Pasteur's discoveries, more than one half of the number of pages being devoted to the great Frenchman's protective and preventive treatment of Rabies, so familiar to our readers. The author is a believer in the efficacy of this treatment, and in concluding his remarks he asks the question as to how the failures to prevent the appearance of the disease in those who have been inoculated, can be accounted for.

His reply is as follows: "When we remember that many of Pasteur's patients have presented themselves for treatment several weeks after being bitten we cannot be surprised that in some cases his treatment has failed, for in such cases we should expect the original poison to have developed to such an extent as to be uninfluenced by any subsequent treatment. Our experience of Small-pox throws some light on this point, there being very strong evidence to prove that it is possible to avert or modify Small-pox by vaccinating those very recently exposed to its infection, while if vaccination be delayed beyond two or three days from infection the course of the disease is unaltered. Again, experience teaches that a child occasionally has Small-pox very severely, and even fatally, after vaccination, yet this does not prove that vaccination is altogether useless. We must not forget that during the course of his treatment Pasteur inoculates his patients with impunity with a poison which, when inoculated into the body of an ordinary healthy unprepared dog or rabbit, with absolute certainty gives rise to all the usual symptoms of Rabies, and kills it in a few days, and which we have no reason whatever to doubt would give rise to Hydrophobia in man had the system not been prepared to resist the poison by the previous inoculation of weaker and less potent virus. The opponents of the treatment must give some reasonable explanation of this fact.

ANATOMICAL OUTLINES OF THE HORSE. By J. A. MCBRIDE, Ph.D., M.R.C.V.S. Third Edition. (Cirencester: Baily and Son. 1888.)

The third edition of this little book does not call for any special remarks. Elementary in its character, simple and correct in description, and neatly got up, its success is evidenced by the demand for it by, we presume, agricultural students. For such it should be very suitable.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

MEETING OF COUNCIL HELD OCTOBER 11TH, 1888.

Professor PRITCHARD, President, in the chair.

Present:—Professors Axe, Brown, C.B., Duguid, Pritchard, Walley, and Williams; Dr. Fleming, C.B., and Sir H. Simpson; Messrs. Briggs, Campbell, Cartledge, Dray, Greaves, Mulvey, J. F. Simpson, Stephenson, P. Taylor, Wilson, Whittle, Woods, Wragg, and the Secretary.

The SECRETARY read a letter which had just been received by the President from Mr. William Hunting, the editor of a professional journal, asking permission for his representative to be present to report the proceedings.

Professor WILLIAMS proposed "That the request be granted."

Mr. MULVEY seconded the motion, which, after a short discussion, was carried.

The SECRETARY read the notice convening the meeting.

Professor WALLEY wished, before the minutes were read, to protest against the circular containing a proposal by Mr. Briggs that Mr. G. G. Mayor, F.R.C.V.S., be appointed Examiner in Botany. That was a most unusual proceeding. It ought simply to be "That an Examiner in Botany in succession to Professor Macqueen be appointed."

The PRESIDENT said he did not think there was anything in the Bye-laws or the Charters to prevent such a notice.

Mr. BRIGGS said he simply gave the Secretary notice that he should propose Mr. Mayor. He did not ask that it should be put in the notice of meeting.

Mr. P. TAYLOR proposed "That the minutes be taken as read."

Sir HENRY SIMPSON said that on the last occasion a resolution was passed by the Council to the effect that a list of the committees and of the members of the Council should be printed and circulated amongst the members of the Council and the presidents of the various medical societies, but nearly three months had elapsed and that useful information had not been furnished to the members of the Council. Another resolution, passed at the last meeting, was to the effect that the College would undertake the duties requested by the Royal Agricultural Society and the Royal Commission on Horse Breeding; but he had recently learned, with very great surprise, that no official communication from the College had reached the Council of the Royal Agricultural Society in time for their meeting in August. Another important fact was that, although the Council had pledged themselves to perform the duty, nothing had been done in that direction down to the present time. He trusted that the President would be able to remove the impression that time had been wasted. He also wished to know if any steps had been taken to carry out the resolution that representation should be made to the Lords of the Council that prosecutions were about to be instituted by the College, and asking them to afford facilities for obtaining the penalties derivable from such prosecutions. The minutes of the last meeting were conspicuous by very important omissions.

The PRESIDENT said the resolution said that the list of committees should be circulated.

Sir HENRY SIMPSON said it was that the list be printed and circulated "as last year," with a list of the members of the Council. Last year they were distributed to all members of the Council, and to the presidents of the medical societies, and the resolution then passed was that they should be printed and circulated annually, so that there was no occasion for the matter to be brought forward this year.

Mr. DRAY asked whether the appointment of Professor Brown as Examiner was in harmony with the Charters.

Dr. FLEMING said that of course the Charters and the Bye-laws regulated the business of the Council.

Sir HENRY SIMPSON said that, on looking into the Charter, he was so satisfied that the matter was all right that he did not take any further trouble about it, and consulted nobody about it. He felt quite sure that the appointment was perfectly legal. On pages 25 and 26 of the original Charter there were regulations according to which a professor might not be an Examiner; but the words said that he should not be a teacher of any student who came up for examination, and applied entirely to membership and not to fellowship.

The SECRETARY said he had found the passage in the shorthand transcript, and the words "as last year" were not there.

The SHORTHAND WRITER referred to his notes, which showed that the words "as last year" were used, although they did not appear in the transcript sent in to the Council.

Sir HENRY SIMPSON asked that some information might be given as to why no letter had been sent acknowledging the communication from the Royal Agricultural Society.

The PRESIDENT said that, as most of the members of Council were out of town, he thought that it would hardly be possible to hold a meeting. The question was so important that he thought the whole Council should deal with it, and he doubted whether even they would be able to deal with it without outside assistance. He did not think that much valuable time had been lost, and he was as anxious to get the matter settled as anybody could be.

Sir HENRY SIMPSON asked if anything had been done with regard to the resolution proposed by Dr. Fleming, and seconded by Professor Walley, that steps be taken to represent to the Lords of the Privy Council the position of the College with respect to prosecutions.

The PRESIDENT said nothing had been done up to the present.

The minutes were then adopted and signed.

Correspondence.

The SECRETARY read letters, regretting their inability to attend the meeting, from Messrs. McCall, Carter, and Simcox.

A letter was read from Mr. James Yates, a registered practitioner, enclosing a guinea subscription in aid of the "Royal Veterinary College."

The SECRETARY was instructed to write to Mr. Yates informing him that the College Fund was closed.

A letter was read from Messrs. Kelly in reference to a circular they had issued in connection with the publication of a "Directory of Chemists, Druggists, etc., in England, Scotland, and Wales." Under the list of trades comprised in that work were included veterinary surgeons.

Presentations to the Library.

A photograph of the Bombay Veterinary College, presented by Mr. Steele; also two pamphlets in the Canarese and Mahratta languages, of his Primer on Cattle Disease, and his *Quarterly Journal of Veterinary Science in India*; two books written by Mr. Frank S. Billings, one on "Cattle Plague and Yellow Fever," and the other on "Swine Plague," presented by Mr. Banham.

On the motion of Mr. WHITTLE, seconded by Mr. P. TAYLOR, a vote of thanks was passed to the respective donors.

Finance Committee.

Mr. DRAY moved that the report of the Finance Committee be received.

Mr. P. TAYLOR seconded the motion.

The SECRETARY read the report, and announced that he had received a

letter asking if the Royal Veterinary Association might hold their meeting in the College next Monday.

Mr. WRAGG moved that the National Veterinary Association be allowed the use of the Council Chamber for their next annual meeting, and that the Provisional Committee be allowed the use of the committee-room for their several meetings between now and the annual meeting, and that no charge be made to the Royal Counties for the use of the committee-room some days ago.

Mr. MULVEY seconded the motion.

Professor WALLEY said that four years ago a resolution was passed to make a charge.

Mr. WRAGG said he would propose to rescind that resolution.

Sir HENRY SIMPSON said notice must be given of such a motion.

Mr. WRAGG said the meeting of the Royal Counties would not have been held in the College if it had been thought that any charge would be made.

Professor AXE gave notice of a motion to rescind the resolution, leaving it to the discretion of the Council from time to time to charge or not, as they thought fit.

The report of the Finance Committee was thereupon adopted.

On the motion of Dr. FLEMING, seconded by Mr. WILSON, the question of charging for the use of the rooms was deferred till next meeting.

The SECRETARY read the report of the Registration Committee, which, on the motion of Mr. DRAY, seconded by Mr. P. TAYLOR, was received and adopted.

Sir HENRY SIMPSON proposed "That the question of the duties, salaries, and allowances of the Secretaries of the College be referred to a committee, consisting of the President and the past Presidents, who at the present time are members of Council." He said he proposed the Presidents and past Presidents because they would be more likely to be acquainted with the secretarial work than others. There were ten past Presidents, so that the committee would be quite large enough. The Secretary for Scotland, whose salary was £50, had said to him, "I think the duties of the post should be well defined; for, although I know how to do everything, the time may come when it will be desirable to have a regular course laid down, particularly with regard to the handling of the Royal College money." There could be no doubt that from time to time it was desirable to look into the question of salaries, allowances, and duties. At the present time the Secretary's remuneration was on an unsatisfactory footing. He was paid partly for his services and partly for the rent of the house. Mr. Cox had given notice of a motion giving the Secretary charge of the books, and that question also might be dealt with by the proposed committee, who would report to the Council at the next meeting.

Mr. WOODS seconded the motion. The resolution was carried.

Sir HENRY SIMPSON withdrew the other motion standing in his name on the notice paper, with reference to the Fitzwygram prizes.

Election of an Examiner.

Mr. BRIGGS proposed that Mr. G. G. Mayor, F.R.C.V.S., of Kirkham, Lancashire, be appointed an Examiner in Botany in the place of Professor Macqueen, resigned. Mr. Mayor, he said, obtained during his College career Dr. Covell's prize for Botany.

Professor BROWN proposed the appointment of Professor Almond, Professor of Veterinary Surgery at the Royal College, Cirencester.

Professor WILLIAMS proposed the appointment of Mr. Hutton, of Kelso.

Professor AXE proposed the appointment of Mr. Richard Poyser, of the Army Veterinary Department.

A ballot being taken, the result of the voting was: For Professor Almond, 11; for Mr. Hutton, 5; for Mr. Poyser, 2; for Mr. Mayor, 1.

The PRESIDENT declared the election to have fallen upon Professor Almond.

Committee on Defects in Horses for Breeding Purposes.

Professor WALLEY proposed that this Committee should consist of the whole of the Council, and all members of the profession who had at any time acted as veterinary surgeons to agricultural societies or horse-breeding societies.

Professor AXE considered it imperatively necessary that the Council should seek extraneous aid in order to prepare a report. It appeared to him that a committee should be appointed to seek for evidence of hereditary influence, in connection with societies for breeding stock. Whatever the report said must be based on matter of fact, and not on the opinions of individuals.

Mr. WILSON was prepared to second a resolution "That a committee of the whole Council be formed to take this question into consideration, with power to add to their numbers."

Professor WALLEY said he was quite willing to alter his motion in accordance with Mr. Wilson's suggestion.

Dr. FLEMING said his experience was that the smaller the committee the greater likelihood there was of having the work satisfactorily done. There could not be a doubt that very much of what was considered hereditary tendency to disease was traditional. A small committee should be empowered to gather evidence upon which to base an opinion.

Mr. CARTLEDGE considered that evidence might be collected without putting on the committee anyone outside the profession.

Mr. J. SIMPSON thought the whole Council should be the Committee of Inquiry, with power to invite not only veterinary surgeons but breeders to give evidence. He should be opposed to outsiders being on the committee.

Sir HENRY SIMPSON thought the best plan would be to adopt Professor Walley's motion. There was no reason why the committee so nominated should not meet within a week.

Professor BROWN said that what the Council had been asked to do was not to appoint themselves a committee or to take evidence, but to call a conference of members of the profession for the purpose of discussing the matter. The whole question was a very large one, and not to be lightly dealt with. Unless a conference was called at which every member of the profession would have a right to attend and express his opinion, the Council would not perform the work which they had been asked to do.

Professor WILLIAMS said he would propose that a small committee be formed to collect evidence to be afterwards considered by the Council, who should, if thought desirable, summon a conference of the profession.

Mr. WHITTLE seconded the motion.

Mr. J. SIMPSON said it was impossible to ascertain from a speaker at a public meeting what his experience had been, and consequently what value should be attached to his evidence.

The PRESIDENT said there could be no doubt that the Council had been asked to call a conference of the members of the profession, but it would be necessary to have a committee to handle the conference.

Professor BROWN thought if a committee was appointed, the simple thing would be to instruct them to take steps to summon a conference of members of the profession. If the Council could report to the Royal Agricultural Society and the Horse Commission that some such steps had been taken they would be perfectly satisfied, but they expected to hear something from the Council at their meeting in November.

Dr. FLEMING considered that the meaning of the word "conference" would be met by sending out circulars with questions.

Professor BROWN said that in that case the committee might have instructions to prepare the questions.

The other motions having been withdrawn, it was agreed, on the motion of Professor WILLIAMS, seconded by Mr. WHITTLE, "That a small committee be formed to draw up a series of questions to be submitted to the profession, the answers to be afterwards laid before the Council, who shall, if they think fit, further confer with the members of the profession."

On the motion of Mr. J. SIMPSON, seconded by Professor WILLIAMS, it was resolved that the committee consist of six members.

A ballot was taken for the election of the committee, and the result was as follows:—Professor Williams, 14; Professor Brown, 14; Professor Walley, 10; Sir Henry Simpson, 10; Professor Axe, 8; Mr. Stephenson, 8; Dr. Fleming, 7; Mr. Cartledge, 5; Professor Duguid, 4; Mr. Campbell, 3; Mr. Wragg, 1; Mr. Woods, 1.

The first six were declared duly elected.

SPECIAL MEETING.

Mr. WRAGG said he had received a letter from the solicitor to the Council, who informed him that his proposed motion should be connected with Bye-law No. 3. He would therefore give notice of his intention to move: "Fifteen days prior to the Annual General Meeting, held on the first Monday in the month of May, the Secretary shall prepare a list stating the names in alphabetical order and residence of the persons proposed, with the names of one proposer only for each candidate."

Mr. J. ROALFE COX not being present to propose the "amendments or additions to existing Bye-laws" standing in his name,

Mr. WRAGG gave notice of the same in his own name.

It was agreed that the Scotch Christmas examinations should commence on Thursday, December 13th.

A hearty vote of thanks was accorded to the President.

ROYAL VETERINARY COLLEGE.

DR. FLEMING, C.B., presided at the opening of the winter session at the Royal Veterinary College, Camden Town, on October 1st. There was a large attendance of visitors and students.

In opening the proceedings, Dr. FLEMING said:—Gentlemen, I have been deputed by the Governors of this Institution to preside at the opening meeting of the School. I need not say I regret the duty has not fallen to one of the distinguished noblemen who take such a lively interest in the Institution, but the business is more a formal matter than anything else, therefore I have very much pleasure in presiding here to-day, and without further preface I will call upon the Principal of the School to deliver the Introductory Lecture. (Cheers.)

Professor BROWN, who was received with cheers, said:

DR. FLEMING AND GENTLEMEN,—An inaugural address is always more or less embarrassing, mainly on account of the remarkable number and importance of the subjects which force themselves forward for consideration. Emphatically this age is one of inquiry. The dogmatic system of the Old School has given place to a system of doubt. We have no longer the definite action of the old physician, but rather the hesitant and expectant or tentative system of treatment which belongs to the new. If you look back upon the time when the mediæval medicine man was half astrologer and half doctor, and compare him with the modern physician, you cannot possibly fail to be struck with the extraordinary dissimilarity. The old doctor was more concerned with his patient's horoscope than with the use of the stethoscope, and

far more anxious to ascertain under what special condition of the planets the person who consulted him was born than he was to find out the particular condition of his excretory and secretory organs.

Having discovered what he wished to find, the doctor had no longer any hesitation. He triturated his powders at certain phases of the moon, and he distilled his potions with various ceremonies partaking of the nature of incantations, and then, having decided exactly what the afflicting humours were in his patient's system, he gave his directions which, if implicitly obeyed, must, he affirmed, lead to the desired result. Whether he believed in himself may be a matter that is open to some question, but that the people believed in him with a reverence that amounted almost to superstition is a fact which stands plainly written on the page of ancient medical history.

Compare the picture of the ancient with that of the modern physician as we see him now by the bedside of his patient who is suffering from some form of specific fever; his diagnosis may be thus expressed. The heat-producing, or heat-regulating functions are out of order, some poison in the blood is the cause of this disturbing derangement; he affirms that this poison must be carefully and judiciously eliminated; he enjoins absolute quiet, free ventilation, and the use of disinfection. If he prescribes medicine at all, it is of the most simple character. He takes the patient's temperature every morning and evening for the purpose of constructing a thermometrical chart. Treatment beyond this the highest authorities as a rule will not attempt. With a firm faith in the reparative power of the system, and a singular disbelief in the efficacy of specific agents, they are content to trust the patient to nature rather than interfere where interference might possibly be disastrous. It may be, and indeed constantly is, the case that there is some question as to what ought to be done, and under these circumstances the most accomplished of our medical practitioners will without hesitation decide to do nothing. Not to interfere with the progress of a specific disease is a maxim of the medical science of the day which no one dreams of disputing.

While, however, the *ars medicinæ* has adopted a retiring attitude and seems bent on a policy of self-effacement, surgery has made a stride forward to the front. Nothing now is hidden from the surgeon's knife. You may bury a tumour deep in the convolutions of the brain, hide it in the midst of the spinal cord, and cover it with ganglia, its detection and removal is a mere graceful exercise of the mind and hand of the accomplished surgeon. (Cheers.) One of our great art critics has said of the accomplished painter that his brush moves within a thousandth of an inch, and that no touch can be wantonly or wastefully made without marring the work. What is this to the thin line of glancing steel in the hand of the accomplished surgeon as he wanders amidst structures to touch which is death to the patient on whom he is operating? The transforming power of the surgeon's knife at the present day equals or surpasses that of the wand of the queen of all the fairies.

In the advance of surgery veterinary science may claim perhaps a humble share. *Experimentum fiat in corpore vili*, and at least we may say we have liberally offered the vile bodies of our patients for the preliminary exercise of the surgeon's knife, but we are bound, I think, to admit that veterinary surgery can never possibly attain the position which it now occupies in its application to the human being. There are certain considerations which affect us from which the operator in human practice is entirely free. If the surgeon can leave his patient with one leg or one arm, or without arms and legs at all, if he preserves his life; if he can give the blind man enough visual power to enable him to distinguish dimly the well-remembered visage of a friend; if he can make the deaf man hear the human voice, if only at its

highest pitch, he earns the gratitude of his patients, but the veterinary practitioner must go far beyond this. If he operates with a view to improving the condition of his patient the owner demands absolute restoration. To hand him back a horse with a damaged eye or a defective limb is merely to reduce the whole matter in his point of view to a joke, and no matter how skilfully the veterinarian may perform an operation, you may depend upon it he will get no credit for success, but rather blame for failure, unless he can restore the animal to absolute soundness. On these grounds I apprehend there is little or no possibility that we shall ever stand on a level with the medical profession in regard to surgical operations, but it may be an open question if we have not carried our hesitation a little too far, and recent experiments which have taken place in regard to the surgical treatment of roaring lead one at any rate to hope there will be a little more boldness on the part of the veterinary operator, which, even if it does not always result in permanent success, would at least be tolerated by the stockowners of the country.

In the course of the various investigations which have been going on in reference to medicine and surgery, it has not always happened that the members of the medical and veterinary profession have been working in strict accord with each other. Why they have not is a question which it is rather difficult to answer offhand. Possibly both professions might agree to accept a share of the blame, as a preliminary step to better things in the future. At any rate, if we cannot successfully compete on surgical grounds, there are a number of diseases which are alleged to have a common feature in their communicability between man and animals, which require careful and patient investigation by medical and veterinary experts acting in strict consonance; and if ever a board or committee of that kind should be formed it should certainly be an instruction to them to endeavour to find out on how many points they could possibly agree, rather than to seek to discover on how many they were bound to differ.

Investigations in science cannot be worked out to a successful issue while there are any personal feelings in the way, or any special views to be proved to be right or wrong. The subject is one of too much importance to be lightly dealt with, and it is one which promises most valuable results if it is only pursued in a spirit of legitimate inquiry, which, strictly speaking, should exclude all personal feeling whatever. (Cheers.) There are some diseases which we all of us know to be communicable between the lower animals to man. We know perfectly well that Glanders has been so communicated. And in regard to Tuberculosis, which is a malady of increasing prevalence among the stock of the country, and probably still worse among the poultry of the country, there is experimental evidence that the consumption of tubercular substances—tubercular products—in the form of milk and other products of the animal body, is a ready method of communicating the disease to a number of warm-blooded animals.

Whether or not the human subject can be so infected is a point in reference to which there is no experimental evidence. The difficulty in reference to these diseases is that, excepting by accident, none of them can be proved to be communicable from the lower animals to man. A pathologist in the pursuit of his subject is bound by the laws of our civilisation, which require that, while any man may infect himself with any disease he may think fit to test, he must not infect his friends or neighbours. Therefore it is that the inquirer often finds himself hampered by evidence which is of a doubtful character, and it becomes all the more indispensable that such evidence should be most carefully sifted before any conclusion shall be arrived at.

I may pass now, gentlemen, for a few moments to a subject which interests you all specially, that of veterinary education in its practical and scientific

aspect. It is somewhat curious, perhaps, that although education is a matter which has occupied some of the greatest minds for very many years, that we are even now disputing about first principles. The question is still being asked, how and what to teach ? So far as our profession is concerned we have no difficulty in answering the question, what to teach ? although there may be some difficulty in deciding how to teach it ; and possibly there may be still greater difficulty on your part to answer the question, how to learn it ? (Laughter.) But there is no difficulty in telling you that you have to make yourself familiar with the subjects of anatomy, physiology, pathology, in relation to all the animals of the farm, and that you are further expected to have a certain knowledge of the collateral sciences, chemistry, botany, materia medica ; and in addition to these you are bound at your entrance upon your studies to show that you have such an education as may reasonably be expected of a man who aspires to become a member of a liberal profession. In carrying out the curriculum of this Institution there are arrangements made for your instruction, both in practice and also in the theory, as it is commonly called, of the various sciences on which all correct practice should be based.

Taking first the arrangements for your practical tuition ; we have a large infirmary in which a considerable number of sick horses are always to be found ; and I am glad, more glad than I can well express, to be able to say that during the last term there were more cattle, sheep, and swine in the walls of this Institution than had ever before been seen there in the same period during the whole of its history. (Cheers.) This very fortunate result was gained in two ways : first by the liberality of the Royal Agricultural Society of England we were put in possession of a grant which enabled us to pay the expenses of the transit of animals, and to purchase those which could be obtained at a moderate cost. And next it depended on the very considerate action of some members of the veterinary profession who, instead of killing and burying animals which were most promising subjects for our purpose on account of the entirely hopeless condition of disease in which they were, obtained these animals for the College and placed them at our disposal. If I might venture to express my gratitude to the members of the profession who have so far aided us, I would beg by way of explanation to say that I use the word gratitude in accordance with its modern and literal acceptation—I mean to express a lively anticipation of future favours in the same direction. (Laughter and cheers.) Speaking generally, it may be said that the students at this College have certainly as good opportunities of acquiring a practical knowledge of their profession as they could possibly hope to possess at any similar institution during the same period of time. As to the scientific department, you will not expect to hear much. There has not, so far as I am aware, been any question as to the facilities which we possess for imparting theoretical instruction. Of my colleagues I shall not speak, except in general terms, because, as each name has a reputation belonging to it, and as each member of the staff has proved his competency to teach by long experience, it would be unsatisfactory to them to be dragged before the bar and coated with paint, even of the most glowing colours. (Hear, hear.) But it is quite permissible to say that they are all very anxious to impart information, and it may be added that during part of the vacation the system of lecturing has been, as far as possible, remodelled, with a view to prevent any repetition of subjects, and so to economise your time as far as possible. Division of each class into two classes for practical work has also been made, and each subdivision will be found to be a fixed quantity. The men whose names are down will be expected to attend, and the senior students will have opportunities of benefiting by taking part in the "cheap practice," as it is called, which brings a large number of diseased animals into the College. Then, gentlemen, there are convenient laboratories. There is the dissecting-room, which

will be frequented by the enthusiastic anatomist from morning till night, the difficulty being to drag him away for the necessary attendance on lectures. There is the chemical laboratory, which will equally require your attention; and since we last met we have constructed, on the model of the one at King's College, a bacteriological laboratory—(cheers)—which will be valuable for those who propose to conduct experiments and inquiries in this abstruse branch of their profession, and there is no question at all of the fact that it has now become a branch of our profession, and that we cannot afford to neglect its cultivation. So much, then, for the ordinary arrangements. In addition, I may tell you I have been fortunate enough to secure the assistance of some distinguished members of the medical profession, who will give a number of special lectures during the session. (Cheers.) And when I mention the names, not with a view to placing one before the other, but simply putting them separately because my powers of speech do not allow me to say them all at once—when I mention the names of Professor Victor Horsley, Dr. Klein, Mr. Watson Cheyne, whose researches on Tuberculosis and suppuration will be most interesting to you; Professor Crookshank—(cheers)—of the Bacteriological Laboratory, King's College; and Dr. Fleming —(cheers)—I think I have said enough to prove to you that there are sufficient opportunities for acquiring knowledge during your pupilage if you will only take advantage of them. But, gentlemen, there is the rub. (Laughter.) Will you take advantage of them? Speaking from a long experience as a teacher, there is present to my mind a type of student which I should be sorry to hold up to your view as representing the majority, but such as he is you shall see him. His Biblical reading stopped short at the Proverbs of Solomon. (Laughter.) He got so far as that verse, "Much study is a weariness of the flesh"—(laughter)—"and of reading many books there is no end." (Laughter.) He at once embodied the injunction, and made it part of his life. For him there is not much study, and there is no weariness of the flesh on that account. (Laughter.) For him there is no end to the reading of many books, because there is no beginning. (Laughter.)

Whatever words of encouragement, or of hopeful anticipation, have been uttered on behalf of the student, please do not apply them to the particular class of individual just depicted. Encouragement is offered only to the working men, the only class of student which we recognise here. Idleness is a disease which is perfectly well recognised in common life. Its symptoms are well defined, but it has not at all engaged the attention of the micro-pathologists; and at this moment we do not know whether it depends upon the influence of a micro-organism, or upon chemical changes produced by an unclassified alkaloid. (Laughter and cheers.) We do know, however, that nobody has yet cultivated the virus, or submitted it to a sufficient amount of attenuation to permit its use for the purpose of protective inoculation. (Laughter.) Various forms of treatment, heroic and palliative, have been adopted, but no cure has yet been found. It is one of those affections which cannot be cured, and therefore must be endured! No, we have come to the conclusion that there is between cure and endurance an alternative plan of treatment, which is known all over the civilised world as "the stamping-out system;" and we here are prepared to apply the remedy of social slaughter to all who may be found affected with the malady, and to adopt a policy of sequestration for all those who have been exposed to the infection, until we find they are sufficiently well to be turned loose again among their fellow men. It is, gentlemen, a question for you to decide which of these classes will enlist your sympathy, not, I am sure, the idle case. Without going through the form of asking you to hold up your hands, I see in my mind every hand held up to the contrary. I look upon you as a lot of working men, and as such I can promise you, some of you who have ambition and

talent, the attainment of the highest ranks of the profession. Recollect there is such a thing as increasing a demand by adding to the supply, and there is no doubt that the stockowners of this country are quite ready to welcome a small army of accomplished veterinarians, who will advise them on intricate questions relating to the outbreaks of many preventable diseases, which are not yet sufficiently worked out, but which cause enormous losses to the owners of that valuable property, the live stock of this country. Those of you who have not the ambition or desire to take the higher rank, and who may be satisfied with performing a useful part in your day and generation, each one of you may, if he chooses, have it said of him at the last that he did his work well, and contributed his full share to the prosperity of the commonwealth of which he forms a part. (Cheers.)

Dr. FLEMING: I rise with the greatest pleasure to ask your permission to propose a vote of thanks to Principal Brown for the very eloquent, instructive, and amusing address with which he has favoured us. I am sure that you all who have the privilege of being here to-day must have listened with the deepest interest to his remarks. It is the first time that Professor Brown has delivered an address to you as Principal of this College, and I am quite sure that you all, no less than the Governors of the College, no less, indeed, than the entire profession throughout the three kingdoms, feel that the direction of the College is in the best hands. (Cheers.) Gentlemen, the points which Professor Brown has touched upon in his remarkable address are points which I trust you will remember. They are of great public interest, but should more especially concern us as members of the veterinary profession. One of the points with which he was induced to commence his address was the relationship between human and animal medicine, and this is a most important matter—important not only to ourselves, who have to investigate the diseases of animals, comparing them with those of our own species, and who have to rely too much on the assistance we receive from the sister branch of medicine—I say this matter is of deep importance to us, but it is also of the highest importance to mankind; and I may tell you this, gentlemen, that in the course of about four years this Institution will have completed its hundredth year of existence, and there can be no doubt about it that one of the chief objects held in view at the institution of the Royal Veterinary College was to co-operate with the practitioner of human medicine in the investigation of disease. When I tell you that the greatest anatomist of the age—perhaps of any age—John Hunter, took the heartiest interest in the founding of this College, and took the liveliest interest in its welfare; and also that some of the greatest surgeons of the day took the warmest interest in its progress—Drs. Babington and Cline, Sir Astley Cooper and Sir Charles Bell, the great discoverer of some of the functions of the nervous system—you will not doubt that when these gentlemen lent their assistance in the foundation of the College they were thinking of the great aid which veterinary medicine should render to human medicine. Soon after these gentlemen left this world, I am sorry to say the medical profession ceased to take a very active interest in the progress of veterinary medicine in this country, and the long interregnum which has occurred since that time has not been conducive to the interests of veterinary medicine or human medicine. But I am glad to observe that of late years the medical profession—the sister profession, as it is called—has begun to take an interest in veterinary medicine, seeing that the welfare of the human species largely depends on a close acquaintance with the diseases of animals. In fact, the medical profession find in our profession a branch of medicine which cannot be separated from human medicine. The two medicines are one. The animals may be different, but the morbid processes and the course of disease are closely allied, so that the keen

physician or the good surgeon of mankind finds in the veterinary profession a profession closely akin to his own; and upon the discoveries which are made in human medicine must depend very largely the progress we make in animal medicine and the converse: discoveries which are made in animal diseases will more or less react upon human medicine. Well, gentlemen, Professor Brown also alluded to the limited scope of the veterinary profession with regard to surgery. That is true. We are limited, I am sorry to say very limited, in our aims with regard to surgery. Nevertheless, I think we have advantages the human surgeon does not possess. As you know, the human surgeon confines himself chiefly to operations on the human body, and the physician to the cure or modifying of disease. The veterinary surgeon has a much wider aim in his profession. Not only does he minister to the lame, injured, or sick animals, but to a large extent he has to do with their improvement in physical qualities, and I am only sorry to say, for the sake of humanity, that the physician has not the same opportunity of exercising his powers. Of late years, it has become a recognised fact that in animals certain maladies have a tendency to reproduce themselves in the progeny, that there is a predisposition to disease, and here it is the province of the veterinary surgeon to investigate and advise. I think if this office were allotted to the human physician, with regard to mankind, it would be highly advantageous to our common species. If the human physician were consulted in regard to the improvement of the human species, and with reference to the eradication of hereditary disease, I believe hospitals would be less required to-day, and we should have a stronger race. I do not think I need intrude further on your time, but I would say this: I would reinforce every word the Principal has said with regard to the importance of the advantages you possess in your course of instruction, and with respect to the great importance of applying yourselves heart and soul to the study of your profession. You now enjoy far greater advantages than the veterinary surgeons of fifty years ago, even of twenty-five years ago. You stand upon the shoulders of your predecessors with regard to these advantages, and I say if you do not avail yourselves of them, and make yourselves good men, the fault will be entirely your own. You may have good teachers, you may have good laboratories, possess every advantage, and yet unless you apply yourselves to study, these things will avail you nothing. It is entirely in your own hands whether you shall become useful professional men, or be social outcasts or "wastrels," as they say in Lancashire—it all depends on yourselves. You may expect, with the advantages you possess at this Institution, with the hearty co-operation you will receive from the teachers in pursuing your studies, and with the application which you should devote to your studies, that you will turn out men in every way capable of taking your place in society as useful members. There are two points of view from which you may look on the profession; there is the scientific point and the practical point. Do not separate the two. Do not believe for a moment that the scientific man is not a practical man. I say the more science you have the better, and the more you apply science the better practical man you will be. I will not intrude further on your time, but ask you to join with me in a hearty vote of thanks to the Principal for the excellent address with which he has favoured us. (Cheers.) I take it that the proposal has been carried by acclamation.

Professor BROWN: It will not be necessary for me to say more than that I accept the vote of thanks with the very greatest pleasure. It is very satisfactory to me to see the theatre so well filled. I indulge in the strong hope that every one sitting before me in the position of a student will go away carrying with him all the honours which his industry can possibly obtain. I

should like it to go forth, in reference to what was said concerning the association of veterinary and medical practice, that so long as I have the honour of directing this establishment, medical men from all countries will be welcomed here. By our laboratories and general facilities we may now be in a position to offer them assistance which may at times be useful. I would wish it to be known that whenever assistance is wanted from us, every member of the staff will be most anxious to afford it.

Professor AXE read out the list of medals, class prizes, etc., which had just been awarded.

List of Medals, Class Prizes, etc., awarded at the Opening of the Winter Session, 1888-89.

COLEMAN PRIZES.

Silver Medal	Mr. W. Perryman.
Bronze Medal	Mr. W. H. Brooke.
Certificate of Merit	Mr. R. W. Knowles.

CATTLE PATHOLOGY PRIZES.

Silver Medal	Mr. W. Perryman.
Certificate of Merit	Mr. W. H. Bush.

SCHOLARSHIP.

£25 per Annum for Two Years ..	Mr. F. M. Hill.

CLASS PRIZES.

CLASS C.

Hippopathology	Mr. R. W. Knowles.
Cattle Pathology	Mr. A. James.
Morbid Anatomy	Mr. W. Shipley.
Helminthology	Mr. W. H. Bush.
Therapeutics	Mr. W. H. Bush.

CLASS B.

Anatomy	Mr. A. Bramall.
Histology	Mr. F. B. Vanderplank.
Physiology	

CLASS A.

Chemistry and Toxicology	Mr. F. E. Place.
Practical Chemistry	Mr. T. C. Garry.
Botany	Mr. J. Row.

Professor PENBERTHY said: A very pleasant task has been allotted to me, pleasant because brevity will meet the case, and pleasant because of the assurance that it will be received by you in the most hearty manner. I have to propose a vote of thanks to our President, Dr. Fleming, for having taken the chair here to-day. I am quite sure the general knowledge which the profession has of him will render any remarks on his position unnecessary, and I beg now to submit the proposition to you. (Cheers.)

Dr. FLEMING: I thank you very heartily indeed for the vote which has just been accorded by acclamation. I assure you it is always a very great pleasure to me to come here, and to-day it is a crowning pleasure. I must confess I was in hope that one of the noblemen who take such a lively

interest in this Institution would have taken the chair. In fact, I think it is well that one of the distinguished gentlemen who assist the progress of the profession in this country should undertake the pleasant office. Nevertheless, as the honour was allotted to me, I have felt the greatest pleasure indeed in acceding to the request that I should preside. I trust for many years to come I shall be allowed to be present. I am sure with advancing years the profession takes higher and higher ground, and the students here to-day will doubtless be excellent practitioners to-morrow. I look forward to those who have just graduated as the men on whose shoulders will fall the very heavy task indeed of practising the profession in the future. I thank you.

The proceedings then terminated.

GLASGOW VETERINARY COLLEGE.

THE winter session of this college was opened on the 2nd October by an introductory lecture delivered by Professor Cooke, in presence of a large number of students and others interested.

Among those present were—Dr. Morrison, Free Church College (in the chair); Professor McKendrick, Glasgow University; Professor McFadyean, Veterinary College, Edinburgh; Mr. Brand, Baillieston; Mr. Cuthbert, Glasgow; Principal McCall, Professors Limont and Tweedley.

The following members of the profession were also present: Mr. J. B. Martin, Rochester; Mr. T. Briggs, Bury, Lancashire; Mr. Carruthers, Perth; Mr. Hunter, Dundee; Mr. Reid, New Cumnock; Mr. Campbell, Kirkcudbright; Mr. Farquhar, Riccarton; Mr. Kerr, Dalry; Mr. Taylor, Cathkin; Mr. Begg, East Killride; Mr. Constable, Inchture; Mr. Scoular, Ballock; Messrs. Reddie, Blue, and Weir, Glasgow; and Mr. McGeoch, Paisley, etc., etc.

Professor COOKE said:

I find myself, on the first day of the new session, placed in the position of introducing you to your professional work.

In former years students have been called upon to listen to important matters pertaining to their profession from veterinary and medical experts. From a chemist you must not expect an address dealing with strictly professional subjects.

I shall, therefore, confine myself principally to a consideration of those subjects of your studies here in which I shall have the honour of being your guide, and for a short time I shall ask your attention to subjects bearing somewhat on professional matters, but subjects on which I think even a layman may venture an opinion.

To begin, I may remind you that this college has just completed its twenty-fifth year, so that we can consider ourselves as celebrating its semi-jubilee. Twenty-five years is not a great time in the life of an institution like this. You cannot by any means consider it venerable at that age, but you may reasonably expect to find it vigorous. In that twenty-five years, however, many and important changes have taken place in the education and progress of the veterinarian.

I have, myself, been connected with this college, and consequently in some degree with veterinary education, for about a dozen years, and during that time the students here have more than doubled, and the time of your studies has been considerably lengthened.

More is expected of you now, and in this direction your work must be more thorough and detailed. No new subject of study has been added since I first joined the teaching staff, but in many subjects the knowledge that would have enabled you to gain your diploma a dozen years ago would not now be considered sufficient for that purpose. Although, therefore, your time has

been extended, you will probably find that the burden is about as much as an average student can well bear.

I am sometimes asked by former students who occasionally pay us a visit, and whom we are always glad to see, if I think veterinary students as a class have improved since I first made their acquaintanceship. The question is, perhaps, a natural one enough, but not quite easy to answer.

I am inclined at first to say "Yes," but I find that that is hardly what the questioner expected, and it does not make him quite happy; in fact, he may even consider it a reflection on himself. I have, therefore, reconsidered the matter, and have come to the conclusion that during my tenure of office there have assuredly been some changes in the class of our students, but whether these are all improvements or no it would perhaps be invidious to say.

There is no doubt, however, that there is a considerable difference between our students now and twelve years ago. Then the average age of students was considerably more than at the present; while we had some rather young students, perhaps the majority were considerably over twenty, and a few verging on middle life. As a consequence, many of them had had some previous occupation, often some kind of manual labour; they had not been used to study, and in some cases their education was not all that we could have wished. In spite of these disadvantages, we often found men of great energy, earnest students, and endowed with good judgment and common-sense; in fact, they often turned out excellent students, and have, I believe, in many cases since developed into successful practitioners, and it will take all your ability, combined with close application, to equal, let alone surpass them. With these we had a class of students who are fast disappearing from our benches, men of middle life, who had been prevented by one thing or another from commencing their studies earlier.

Then, though honest and earnest in their work, they did not, I am afraid, always derive the benefit one could have wished. That they got *some* good is more than probable; whether they were wise in giving up their previous employment for veterinary science is somewhat doubtful.

Some may find it worth their while, but on the whole I should not like to advise a man much over thirty to begin to study for a veterinary surgeon, unless he had a great talent in that direction. Some such men may do well, and I can well remember the joy and gratitude of a promising young fellow of fifty, who remarked, on passing an examination, what a capital start in life he had got.

Another class of students has almost entirely disappeared, I mean the smith. I would say plainly, however, that I have no objection to smiths as such, and mean no disparagement to them; we, indeed, often meet with young men who have been working at the forge having a laudable ambition to become veterinary surgeons; of these I have nothing to say but in the way of praise; they are usually industrious, intelligent, and well aware of the value of time and money, and have often been found among our best students. Another class of smiths, of whom I have never seen many examples, study merely to pass and get the name of veterinary surgeon, with the idea that it will form a useful adjunct to their original business. Sometimes I have heard it said that they give veterinary advice gratis, in order to develop their smith's business. When I meet with one of these men, I always think it is a thousand pities to spoil a good blacksmith to make him into a third-class veterinary surgeon.

Within the past few years our students have been considerably younger than formerly, and the average age is not perhaps more than seventeen years. This has its advantages, as coming directly from school, they are fairly well educated, and have been used to study.

I should like, in the next place, to make a few remarks concerning the subjects I teach in this college. One of the most important subjects of your first year's study is chemistry, and this subject, so necessary to your future progress, has been regarded as one of the fundamental subjects of medical study, ranking in this respect with anatomy and physiology, and having consequently a double claim to your attention, as being in a great measure the foundation of the latter science.

From the earliest time chemistry has been closely associated with medicine; in fact, we may say that chemistry, to a great extent, arose from the necessities of the medical man; chemistry, as far as it went, was the humble servant of medicine; and that early connection has more or less been maintained till comparatively modern times. If you, for instance, write down the names of the best-known chemists of, say, the beginning of the century, you will find that the majority, perhaps, have been connected with medicine or pharmacy. The connection is now more or less broken, to the advantage of both sciences, the enormous development of chemistry that has taken place during the present century rendering it imperative that to ensure even a moderate amount of success in this subject, one's undivided attention should be devoted to it alone.

As showing the enormous progress made, we may compare the position of a student now with that of his fellow in the early part of the century. A reminiscence of Dalton, the celebrated Manchester chemist, was published by a medical man a few years ago, in which he incidentally remarks that Dalton's course of chemistry consisted of six lectures. That will surely make your mouth water. Alas, those times have gone for ever! now we have at least one hundred, besides laboratory work.

Modern chemistry—chemistry having claims to rank as a science—only had its origin in the latter half of the last century. The nature of combustion was not understood till then, and the importance of the balance was not recognised in chemical investigations. Consequently, notions of the composition of properties of bodies were often only of the vaguest kind. The result of this is seen in older works on materia medica and similar publications, where absurd remedies were prescribed, and impossible properties ascribed to them.

During the past fifty years especially the progress in all departments has been amazing, but I would particularise more especially that department known as organic chemistry. This, though always regarded by medical men as of great importance, did not at first yield any very promising result. The reasons for this were, in the first place, the right mode of their investigations had not been discovered; and in the next place, organic compounds were regarded with a certain amount of mystery, and were thought to stand apart from mineral chemistry in this respect, that their combination was brought about by vital agency. But science has become more material, and now this barrier between the two branches has been broken down. It is interesting in this connection to note that this took place with an important animal substance, urea, which was first built up from its elements without any vital agency in 1828, and this so modified our ideas as to be often regarded as the starting-point of modern organic chemistry. Since that time hundreds and thousands of substances have been obtained by the same manner of synthesis, and in the future what help the chemist can afford the medical man will especially be in this same branch of organic chemistry.

The chemist has, however, done a good deal for the student of medicine. Medical men (and when I use this term you must understand that it includes those who practice veterinary medicine) are prone to demand impossible things of the chemist, and then make uncomplimentary remarks if they don't

receive satisfactory answers. But I would first ask how you have used the materials placed at your disposal by the chemist. You have now your remedial agents prepared in a pure state, and should consequently be surer of their action; and besides that, you have at your disposal an enormous number of substances, and, I fear, you have not kept pace with the chemist, the physiological and therapeutical action of the majority of them being very imperfectly studied. Yet their investigation in many cases would doubtless repay the necessary expenditure of time and trouble, and might even react beneficially on chemistry itself, it having been found that in some cases compounds resembling each other so closely in properties as hardly to be distinguished by chemical methods, can readily be distinguished by their action on the animal body. Investigations of this kind seem particularly fitted for educated and zealous veterinary surgeons, and I hope yet to find them in this country taking a fair share of work of this nature. The object of almost all our veterinary students in their chemistry class is to qualify for the examination of the Royal College of Veterinary Surgeons, and their study of chemistry is followed as a means to attain this end. That being so, and the time of students being limited, it is of great consequence that their course of study should be wisely planned and the examinations judiciously conducted. In both these respects I think you are fairly well off, though in one or two particulars not incapable of improvement.

The R.C.V.S., contrary to the practice of some examining bodies, issue no official syllabus, and do not even always prescribe the mode in which the examination shall be conducted. This has its advantages, but it leaves a great deal to the examiners, and infers that the examiner is a wise man. I believe, on the whole, the examiners are at present a very good board, wishing to do justice to all parties—to the profession, the public, and the students. You must remember, however, that examiners are appointed for five years, and if an undesirable man happens to be appointed it is not so easy to get rid of him until he has had ample time to do a deal of mischief.

There has been a good deal of tinkering at examination matters since I have been connected with teaching here, but on the whole the direction has been one of improvement, though some matters are by no means perfect yet.

When I first came here the examination was conducted partly by veterinarians and partly by medical gentlemen. This seemed to answer fairly well, and few complaints were heard; after a few years, however, it seemed good to those in authority that veterinarians should be the sole judges of those who were admitted to their ranks, and consequently, with one or two exceptions only, the examining board was made up of veterinary surgeons. This arrangement did not quite fulfil all that was expected of it. The complaint has been made in the medical profession that examiners were not always experts, that they were behind the age in their more scientific subjects. I believe this holds good to a greater extent among veterinarians, this being a smaller profession; hence it was found that in the more scientific parts of the examination the older arrangement was to be preferred, and that has been to a great extent restored. I think it important that in these subjects at least one expert should be appointed at each table. As far as the chemistry is concerned, the examiners have always been all that could be desired, and if students failed who should have passed it was the fault rather of the system.

The mode by which your knowledge is tested admits, in my opinion, of certain improvements.

As you are aware, the examination of veterinary students is entirely oral. This is often an excellent way of sifting students, but I believe it not seldom leads to injustice. In most similar examinations there is a written paper, followed when necessary by an oral test, and this to my mind

(for I speak for myself only) is far preferable, as it gives both students and examiners a better chance. Students not seldom fail, not from want of knowledge, but from nervousness or a natural retiring disposition, while the cool, self-satisfied, and perhaps idle student gets through by making the best of his little knowledge. It is true that self-possession and coolness are not undesirable qualities in a veterinarian, but these would in many cases be a mere matter of time. For my own part, I should like to see such a written examination introduced, and I believe some of the present examining board favour the same idea. In the earlier periods of veterinary education there might have been objections to this mode of examination, but these can no longer exist.

Teachers must have a better chance of judging of the capabilities of students than examiners can possibly get in fifteen minutes, but still in awarding their positions at the end of the session we usually do so by means of written papers.

There is another way still in which I think the chemistry examination might be improved.

I believe in all the veterinary colleges a practical course of chemistry forms a part of the usual curriculum. Practical knowledge, when properly gained, is of the greatest importance, and in modern science is most rigidly insisted on; so that we have laboratories, not only for chemistry, but for physics, botany, physiology, pathology, and most other sciences. The veterinarian, too, is a great believer in practical knowledge, but strange to say, there has never been any attempt to test practically a student's knowledge in practical chemistry.

This, I think, is hardly fair to the student; he is fairly entitled to credit for any knowledge he possesses bearing on his profession, but the want of such an examination as this is a direct inducement to cram, and all teachers know that a stimulus in this direction is needed. I have spoken to all the examiners in chemistry of the last three Boards, with one exception, and they were all favourably inclined to such a step. I am told, too, that the majority of teachers desire it, and I believe the students as well. All that stands in the way of its accomplishment is a want of time. The examiners have the power to test a student's knowledge in any way they please, but each student is only under examination fifteen minutes, so this renders this kind of test impossible. If, however, he was allowed one or two hours more for the whole college, this would be all that would be required, as they might be examined all at the same time. You must understand that I do not propose to lay on any additional burden; on the contrary, I am only advocating giving you credit for knowledge for which at present you do not get full justice.

Just a few words also on another branch of your study. I mean botany. This was the latest subject added to your curriculum, somewhere about a dozen years ago, a year before I became associated with the college. One old friend, Dr. Knox, was the teacher during the first year, but he resigned it at the end of the session. I was then asked to take up that subject, and have been teaching it since. At first it had not the relative importance it now possesses, in at least an examination point of view, being associated with materia medica, and these two ranking together as one subject. When, however, a change was made in your studies it was separated from materia medica, and, with it, placed on a par with chemistry. A further change has taken place, and now your subjects for the first examination are botany, chemistry, and anatomy, and they are all of equal value as far as passing your examination is concerned.

While admitting the importance of botany to the veterinary surgeon, I should hardly rank it equal in importance to these subjects, but there matters stand at present, and we must make the best of it. During the past year,

however, a change has occurred that renders my own task, and yours also, a more difficult one. As you are aware, we formerly had a winter and a summer session, and the botany teaching was mainly, and sometimes entirely, confined to the summer session; now our teaching terminates early in May, and in Glasgow the winter is only just over at that time. That, as I said, increases our difficulties, for botanical teaching to be efficient must be practical, and this necessitates a good supply of plants, best in a fresh state. Misfortunes are never said to come alone, and during the past year the Botanic Gardens, to which we had formerly access, have been closed; and although I hope that this will be merely temporary, you must bear in mind that you will not under our new conditions get the same benefit as formerly, for the reason I have already mentioned—having a winter session only.

I have not mentioned these matters to discourage you; on the contrary, I see nothing to be discouraged about; the conditions have simply altered, and we must endeavour to accommodate ourselves to them. It will certainly, however, require greater effort and application on your part than was formerly the case. We shall to some extent have to use dried instead of fresh specimens, and you will have to make the very best use of the comparatively few fresh specimens to be obtained up to the time of your examination.

Last year in all the veterinary colleges this subject occupied an unenviable position in the examination-list: as far as my own students were concerned, they were equal to, or even above, the average of former years.

The poor results were due to a different system of marking, and the examinations not recognising the altered conditions of botanical teaching in veterinary colleges. And as regards the examination in this subject, I think that to put it on a satisfactory footing, at least one examiner should be a botanical expert; at least he should have some claim to be termed a botanist. He should also be sufficiently well acquainted with botanical teaching to be able to judge fairly what a student ought to know after a session's study; and he should be a man without fads. If such a one can be found among veterinary surgeons, by all means appoint him to the vacant post; but if a veterinary surgeon possessing the needful qualifications cannot be found, then it will only be a matter of the barest justice to the student to seek him elsewhere.

It is not out of place to remind you, however, that in another respect your difficulties are increased. A new system of marking was instituted last examination, and one of the lower marks abolished, so a student requires to be a pretty even all-round man to pass a successful examination. You must remember, therefore, that it will no longer do to pay particular attention to any favourite study; in fact, it would be wise to give most time to those you like least. There will be time enough for specialities after you have obtained your diploma.

Scarlatina and Milk Supply.

In recent years we have heard a great deal about the propagation of disease by means of our milk supply. As earnest seekers after truth, you must not always believe unauthoritative newspaper reports, as these may often be sensational, and have only a slender foundation of fact; and when once an idea of this sort has been started there is a great tendency to panic, and to blame milk for every ailment.

Yet, discounting all this, many cases of a very serious nature have occurred, which have undoubtedly been traced to infection carried by the milk supply; and it has been proved again and again that a very great danger to the health of the community exists in the distribution of this article, without proper attention being paid to sanitary precaution and supervision.

It was, I think, in 1873 that attention was first seriously called to this subject. A physician living in the West End of London had cases of Typhoid Fever in his own family, and it soon came to his knowledge that similar cases had occurred in the families of his brother practitioners and that of his neighbours.

The only common circumstance in these cases was the supply of milk, which was obtained from the same dairy. The fact of there being such a general outbreak, and of the existence of any such disease at the farm from which the milk was derived, was shortly after denied. As soon, however, as the idea had been made public there was a tendency to ascribe every obscure outbreak of any disease of this kind to the milk supply; but as such outbreaks became better and more thoroughly investigated, it has been undoubtedly proved that in many cases disease has been propagated by means of the milk supply, the disease being present in the family of the farmer or vendor, and being almost entirely confined to customers supplied from diseased sources. Diphtheria and Scarlet Fever have also been propagated in this way.

The contagion appeared in most of these cases to be directly communicated by people recently suffering from these complaints to the milk, or in other cases from having been in contact with such persons. Cases are, I believe, also known where disease has been spread by contaminated water having been used for dairy purposes.

From time to time, however, cases occurred that appeared not capable of explanation in this way. Scarlatina, for example, seemed at times to have been spread by the milk supply, although this disease had been unknown in the families of the farmer and vendor, and sometimes even in the neighbourhood for months before, and that, too, in places where the general sanitary conditions were unobjectionable, the water supply good, and intelligent attention paid to known precautions against the spread of infection.

Cases of this kind had occasionally occurred, but no very thorough investigation took place in any of them till a few years ago. Some of you will doubtless remember that at our last year's meeting allusion was made to what is known as the Hendon case; and as this was the first case thoroughly investigated, with your permission I will briefly recapitulate the particulars of that case, as they may not be known to you all. I do so more especially as we have lately had a similar case nearer home, to which I shall return immediately.

In December, 1885, the medical officer of health in one of the districts of the West End of London reported an outbreak of Scarlet Fever, and after due investigation, it was conclusively shown that the spread of the disease was coincident with the milk supply from a dairy farm at Hendon. But now the difficulties began, because on further inquiry it was found there had been no case of disease in the family of the farmer, or in that of any of the people employed on the farm or their families, and in fact the neighbourhood had been singularly free from this disease for months previously. Although, therefore, the evidence pointed to the spread of the fever from this farm, yet it was pretty plain that it could not have occurred by any hitherto known methods of infection.

On further investigation attention was directed to some cows purchased some months before; these, though apparently healthy and feeding well, were thin, and not equal in appearance to the rest of the stock. When attention had been drawn to these animals it was also found that the hair came off on certain parts in patches, and there were small scabs or ulcers on the teats and udder. Other portions of the stock were somewhat similarly affected; these were placed in a shed by themselves, and their milk ordered to be destroyed. The men employed on the dairy farm not believing there was anything wrong with the cows or the milk, gave some of the latter away to

some families that had asked for it, and in these families Scarlet Fever shortly afterwards appeared. (This was the first appearance of Scarlet Fever in the neighbourhood of the farm.)

The cows in which the above appearances were first noticed were removed to the Brown Institution, in London and were afterwards killed, and their kidneys and other organs were found diseased.

In the scabs on the udders micrococci were found, and calves inoculated with the matter from the scabs exhibited somewhat similar *post-mortem* appearances, and in the tissues of these inoculated calves the same organism could be found as existed in the ulcers on the cows. The milk from the cows was ropy in appearance on standing.

I now come to a somewhat similar case nearer home. Some of you will no doubt remember that in the spring of this year there was an outbreak of Scarlatina and sore throat in this immediate neighbourhood, being in fact mostly confined to Garnethill. On investigation it was found that in this district 101 cases of these two complaints had occurred, and further that, with one exception, the milk supply came from the same dairy. Further inquiry showed that in the family of the dairyman no case of Scarlet Fever had at that time occurred, nor in the family of the farmer, nor in the families of the farmer's employés. (The disease afterwards appeared in the families of both farmer and dairyman, but that was a fortnight after its first appearance in Garnethill.) It will be seen, therefore, that this was a case very similar to that at Hendon, and further examination showed more resemblances still.

A visit was paid to the farm by Dr. Russell and our own principal, and they found that the general and sanitary arrangements were satisfactory, but two of the cows exhibited the same appearance as has been described in the case of the Hendon cows. On account of their feeding well, the farmer did not suspect anything wrong with them. They were removed to the College, where they remained for some weeks. In appearance they were somewhat thin (towards the end of their stay they improved in this respect), and they presented the same appearance as the Hendon animals as regards hair and the occurrence of ulcers or scabs on the teats. The temperature was taken twice a day, and was fairly constant and normal. In the case of their urine, however, there was a considerable disturbance from what one usually finds. The specific gravity was high, there was a considerable quantity of albumen present, and an enormous amount of uric acid, reaching in one instance to more than 1·7. This acid, as is well known, does not occur in the urine of the healthy animal, but may often be found when there are disorders of the kidneys or lungs.

In the case of the cows investigated at the Brown Institution there was a diseased condition of the kidneys, and also in a calf killed here; and perhaps it is not unfair to assume that the presence of the uric acid and albumen indicated the probable presence of a similar condition in the cows here; but as these were not killed, this must not be taken as proved.

The milk was also examined, and a condition similar to that of the Hendon cows was noted.

There was a decided ropy appearance, and a partial separation of curd on standing. The specific gravity was very low, about 1,025, and the total solid matter only a little over 8 per cent., against 12·5 in normal milk, and there was a great deficiency of butter fat.

Dr. Limont has furnished me with a few particulars of the investigations made by Dr. Carmichael and himself, from which I gather that a calf fed from the milk of these cows after some time exhibited the same appearance as regards the hair coming off in patches as the cows, that micrococci were found in the milk from the cows, and that the same organisms were found in the calf when killed and in cultivations from the same animal. In the same

calf there was a diseased condition of the kidneys, somewhat similar to that found in the Hendon cows. I have no doubt but full details will afterwards be published, but in the meantime I have permission to state so much. I do not pretend to say that it is absolutely proved, or at all universally admitted, that the Scarlet Fever was actually derived from the cow in the way suggested, but I think a case has been made out for further careful investigation as opportunity occurs.

Tuberculosis.

Another matter of the greatest importance, both to the public and to the medical and veterinary professions, is that of Tuberculosis; and as this subject is occupying some attention at the present time, it may not be out of place to allude to one or two matters in connection with it. This disease is, as you are aware, very prevalent, much more so than most people outside the veterinary and medical professions are aware of. It may be also taken as absolutely proved that it is capable of being communicated from one animal to another by means of either the flesh or milk. There is also no doubt that it may also be communicated from the lower animals to man by the same means.

This being so, the extensive existence of this disease is of vital importance to the community at large.

The importance of the subject is increased when it is remembered that at present there exists no means of dealing efficiently either with the flesh or milk of such animals as may be afflicted with this disease, and that the guardians of the public health are, to a certain extent, powerless to prevent the sale of either the flesh or milk of such animals.

The disease, though not readily detected in the living animal, may be recognised in the flesh of such animals when slaughtered; but the further important question then crops up, What is to be done with the flesh of such animals, in which tuberculi have been found? Our population are not overfed, and we cannot afford to waste meat fit for human consumption; at the same time, no risks to the public should be allowed, especially as in cases of this kind the danger falls on those least able to protect themselves.

It is well known, however, that in this, as in many other kindred cases, all danger may be avoided by efficient or thorough cooking. If the degree of heat be sufficiently high to destroy the vitality of protoplasm, all danger may be avoided; this, however, is not always such an easy matter as at first sight appears. Meat may be, and is frequently, used cooked very imperfectly or not at all, in which case there would be very great danger indeed. And this would perhaps be more likely to occur in animals of this kind than in those which are quite healthy and in good condition. These animals are, I believe, known to the trade under the technical name of "mincers," and if made into sausages there is hardly a form in which it would likely to be more dangerous.

I have hitherto been calling Tuberculosis a "disease," but I believe the difficulties in dealing with it lie in this, that it is not placed in this category in the Contagious Diseases (Animals) Act. That Act mentions, among other diseases, Cattle-plague, Foot-and-mouth Disease, and Pleuro-pneumonia, and expressly provides that the flesh of animals suffering from these diseases may be destroyed if its consumption would be attended with danger; and the milk of animals so affected is not allowed to be sold for human consumption, or even given to pigs, without being first rendered harmless by boiling.

If, therefore, medical officers of health and veterinary inspectors had the same power of dealing with Tuberculosis as they have with those diseases comprehended in the Contagious Diseases Act, they would be in a position to deal more effectually with an important matter affecting public health.

It seems to me, however, that this is not all that is required. It is all very well, and only right, to kill animals from certain diseases such as this, but as a layman it appears to me that more attention should be paid to the prevention of such diseases, because I believe I am right in saying that many of them are preventable if sufficient authority were given to men competent to deal with them.

In Tuberculosis, for example, the conditions under which it arises are fairly well known. It is, I believe, known that want of ventilation and of obvious sanitary precautions are favourable to its occurrence, and this danger is rendered more real by the modern practice of confining cows to sheds for a greater portion of their lives than formerly.

To kill, kill, and kill only seems a clumsy expedient, unscientific, unsatisfactory, and unworthy of the present advanced state of medical and veterinary science.

Now, if I venture to make a suggestion I hope no one will be ill-natured enough to begin quoting poetry about fools and angels, but chemists have had some experiences that might afford food for thought in this matter.

It requires only a little knowledge of chemistry to be made aware that however fascinating the study, it is accompanied by certain conditions not appreciated by outsiders ; in fact, a chemical Philistine will tell you plainly it is an unmitigated nuisance.

When operations are carried on on a manufacturing scale this of course becomes an important matter, and considerable attention has been paid to the abatement of such nuisances. This has rarely been done voluntarily on the manufacturer's part, but only under compulsion ; but when compelled he often finds that the proceeding has been an economical one. Now, I would ask is such a result beyond the range of possibility or probability in the case of Tuberculosis? Why should not stock-keepers be compelled to keep their cattle under proper conditions if it is for their own advantage as well as that of the public? It seems not impossible if a beginning were made here, and when good sanitary conditions were obtained, then begin to kill the affected animals, you would be on a surer and more scientific basis, and in the end it would not only be a public benefit, but be profitable to the farmer as well.

I am afraid, however, that we are somewhat slow in moving in such things, but an intelligent interest by our rising race of farmers may do much.

It is gratifying, however, to know that something may be done in this matter in the near future. A Departmental Committee, appointed by the Privy Council, have taken evidence regarding the prevalence of Tuberculosis, and they recommend that it shall be classed with Cattle-plague, Foot-and-mouth Disease, etc., so that if these recommendations are sanctioned by Parliament the same power will be possessed in dealing with the disposal of diseased animals, and the milk of those known to be diseased, as now exists in the case of all other scheduled diseases. This, if not all that might be desired, is at least a step in the right direction, as it will enable those in authority to deal at least with the grosser forms of this disease.

You must accept these remarks for what they are worth. My only excuse in bringing them before you is that matters pertaining to the prevention of diseases will likely occupy more of the attention of the veterinary practitioner in the future than they have in the past ; and they seem also worthy of your notice as opening up important questions in comparative pathology.

It is usual on occasions like the present to conclude with a few words of advice and guidance to our junior students. I have not much to say on this subject. Good advice is plentiful and cheap, and it is not so often followed as it should be ; and perhaps students sometimes get too much advice and lecturing. In fact, it would be interesting to take turn about, and put up an intelligent student to criticise, advise, and lecture the teachers as to their

conduct, lectures, and general proceedings; it might do good, and let us see ourselves as others see us.

However, after all, I will make one or two general remarks before concluding. The work now required of you is such that it can only be performed properly by those having a tolerably vigorous body and mind.

Sometimes, but not often, our students work too hard, and injure their health. In my opinion, however, they oftener injure themselves by not working hard enough.

Steady rather than hard work is what is required of you. Many of our students are enthusiasts at first, and full of good intentions and resolves, but cool within a month, and in the end are nowhere.

Some, again, have no enthusiasm, but seem to have a notion that the teacher does everything, and the student is merely a passive agent.

A good deal of energy, too, is wasted by being misdirected. I have even known students attempt to learn their text-books by heart, and accomplish it; and when their formidable task was done they found themselves like David in Saul's armour, in the possession of what was a hindrance rather than a help. Above all things, read little, and attach some meaning to what you read. I well remember a student coming to me in great trouble; he was making no progress, so he said. I asked him if he read at home. Yes, he read fifty pages a night—read, in fact, as long as he could keep his eyes open; he sometimes fell asleep reading, but in the end he knew no more than at the beginning. I advised him to read two pages instead of fifty, not to read except he felt in proper trim, and to make sure he understood what he was reading about. He possibly took my advice, for he afterwards turned out a successful and intelligent student.

Accustom yourselves to look at a fact on all sides, and not merely as presented to you in the text-book, or even by the teacher. I often find that a student knows a thing well in a text-book style, but in no other way. Ask him, for instance, how he will make hydrogen, and he will be quite pat with the answer; ask him, however, what happens when you pour dilute sulphuric acid on zinc, and he will possibly say he never heard of such a thing.

I trust the session now begun will be a successful one, and the beginning of an honourable professional career to you all.

NEW VETERINARY COLLEGE, EDINBURGH.

THIS college was opened for the session 1888-9 on Wednesday, the 3rd October, at two o'clock. The chair was occupied by the Earl of Haddington, and among others upon the platform were:—Colonel Maclagan; Captain Steuart; Mrs. W. O. Williams; Mrs. Ivison Macadam; Miss Blackhurst; Messrs. Aitken and Miss Aitken; Mrs. Kirk; Mrs. Adamson; Mr. and Mrs. Rutherford; Mrs. and Miss Walker; Mrs. Douglas; Mr. Gillespie, A.V.D.; Mr. Cunningham; Mr. Borthwick; Mr. McGregor; Mr. Cuddy; Mr. Tawse; Mr. Liddel; Mr. Taylor; Mr. Spreull; Mr. Bannatyne; Mr. Phillips, A.V.D.; Mr. Hutton; Mr. Reid; Mr. Mackay, Educational Institute; Mr. Martin; Mr. W. Woods; Mr. Briggs; Mr. Robinson; Mr. Ritchie; Mr. P. Moir; Mr. Edmondstone; Mr. Gray; Mr. S. Wilson; Mr. Storrie; Mr. Brown; etc., etc.

The following apologies for non-attendance were received: Marquis of Lothian; Sir W. Turner, Edinburgh; Sir Henry Simpson; Professors Brown, C.B., and Pritchard; Major Hall, 15th Hussars; Messrs. Clarkson, Leeds; W. A. Taylor, Manchester; Wragg, London; Greenhalgh, Leeds; Purdy, Belfast; Dobbin, Waterford; Nield, Siddall; Hickes, Yorkshire; Faulkner, Manchester; Baird, Hay; Banham, Cambridge; Swan, Edinburgh; Wolstenholme, Manchester; Urmston, Bolton; Clark, Southport; Hurndall,

Blackheath; Olver, Tamworth; Hack, Leicester; Mutter, Edinburgh; Fullarton, etc.

The CHAIRMAN, who was received with prolonged applause, said, Ladies and Gentlemen,—I have been asked to occupy the chair on this important occasion—the opening of another session of this college—and recognising as I do the value and importance attached to the veterinary art in such a country as this, or indeed in any country, it affords me very great pleasure to do so. (Applause.) I may commence by saying that I am not going to give you an address, but to listen to one from one more competent to do so than I. I have had the pleasure this morning of going round the college with Professor Williams, and looking into every department, and I must say it was a very pleasurable visit. Everything I saw persuaded me that the institution is in every way most admirably fitted and adapted for its purpose. (Applause.) And, gentlemen, when I look through the list of professors and teaching staff I cannot but think that this college is as fortunate in obtaining the services of such gentlemen as the students of the college are in having the instruction so competently given by them. (Applause.) I believe it is a recognised fact that Scotchmen generally make their mark; anyhow, it is a recognised fact that Scotchmen succeed pretty well wherever they go. Not only do they succeed in most things which they take in hand—not only do they succeed in the pursuit of commerce or agriculture, but in science and in art. (Applause.) It seems to me that they more especially excel as professors of the healing art, as followers of surgical and medical science; and by this I mean, not only as regards the human subject, but also as regards the domestic animals, whose life and health are so valuable, so essential to man. Now, in regard to the first class of whom I speak—of those whose study has been the human subject—it would be invidious on my part to mention or particularise any one at the present moment as a distinguished ornament or a shining light in his profession, here or elsewhere. But when I refer to those at present practising their profession here or elsewhere I think that we as Scotchmen may be proud when we recall the names of some that have been taken from us for ever; when we recall the name of Mr. Liston, a man I remember, though perhaps few of you here do, a man whose heart was as great and kind as his hand was strong and steady; or when we recall the name of Sir James Simpson, a man who was the discoverer of the application of anæsthetics, not only to mankind, but to our four-footed friends. Chloroform, as you know, is now used in treating animals suffering from tumours, and in other necessary but painful operations. When we recall the names of such men we may be proud of them. We can look upon them as benefactors to mankind. But to refer to the second class, those who study, not human, but animal life. I say we may again congratulate ourselves upon the fact that the colleges of Edinburgh have sent forth practitioners in the veterinary art who have distinguished themselves in every part of the civilised world. (Applause.) Amongst those who passed recently away I recall such names as Robertson, Dick, and others; and in the present day I think we need not look very far (looking towards Professor Williams) to see one who has made a name, an enduring name, for himself, and has arrived at the top of the tree. Now, gentlemen, I began by saying it was not my intention to make you a veterinary address, because I am not competent to do so, and because if I did I should be infringing upon the ground of him who is to address you on the same subject. I should like, however, just to say a few words more. I can remember many great changes in the veterinary art. I remember, for instance, when before a horse was sent out to grass or turned out to the straw-yard it was thought necessary to blister him "fore and aft," as the sailors say, and when he was taken up again he went through three courses of physic. The first was called "stirring

up" the humours, the second I do not remember, and the third was for "allaying" them. Veterinary knowledge has dispelled such needless, almost barbarous practices. But, gentlemen, though I do not pretend to go any farther in this direction, I should like before sitting down just to make one or two remarks, or—if you do not think me impertinent—to give you one or two words of advice. Now the science necessarily requires a great deal of study. Not only in the abstract does it require great study, but it is a science that of necessity combines the knowledge and acquirement of various others of the great sciences; anatomy, botany, chemistry, and many others are necessary acquirements to become adepts in your science of the veterinary art. What I would say is this: The one great thing which obtains for a man success in any science or art—as in learning a language, in painting, drawing, or music—the one great thing necessary is a thorough groundwork, thoroughness in study, and thoroughness in work. I know what "cramming" is, because I have tried it myself. Cramming may pass you through an examination, may even get you a diploma, but, depend upon it, it won't pay. As the Americans say, "it is not business." (Applause.) A thorough groundwork in the elements of your profession, that is the rock on which to build your house. (Applause.) Without thoroughness in study and thoroughness in work, depend upon it you will never achieve eminence or success in your profession. (Applause.) I will give one other word of advice to young students, and it is this: When you go forth as practitioners in the world, remember that there are few things more conducive to success in your profession than giving undivided, untiring attention to your subject. By subject I mean the patient or animal under your charge. This attention is absolutely necessary. I am quite aware that it is not always in the power of a professional man to give the time necessary to see his orders thoroughly carried out, but where it is possible do it. You may give the very best directions and instructions; your prescriptions may be all right; but in many cases, through ignorance, or sometimes the prejudices of illiterate grooms or other servants who have to carry out your orders, those orders are not properly carried out, and your treatment fails. Give, if you possibly can, undivided attention to your work; show that you take up your case *con amore*. Enter into it with a determination to do your very best, and it will gain you popularity and consequent success. I have already detained you too long with these remarks. I must thank you for the patient hearing which you have given me; and I will now call upon Professor Macadam to give you the introductory address. (Loud and prolonged applause.)

Professor Ivison Macadam then delivered his address.

My Lord, Ladies, and Gentlemen,—In former introductory addresses we have had laid before us the history of veterinary teaching, both in this country and on the Continent, and we have also from time to time considered the special history of this college. With these subjects we are well acquainted, and therefore I have thought it might be better if, instead of following the historical line, I branched off at one of the junctions between the grand main trunk and my special subject of chemistry and toxicology.

Before doing so, however, permit me, my Lord, to express to you the pleasure we feel in the honour you have conferred upon the college, upon its principal and teachers, and upon its students, by your presence here to-day, and I need not assure you that the interest you have thus shown in the science and in the college will long linger in our memories and will be one of our most pleasant recollections.

Whilst thinking over various connections of chemistry with the general subjects taught in this college it has appeared to me that we might, with some profit, and, I trust, a little interest, consider a few of the forms of chemical action. Chemical affinity is said to be shown when two or more unlike

substances combine together to form a new body, which has properties unlike the substances which have gone to form it. The force exerted during such a combination is chemical action. In all chemical actions it should be possible to represent the combination symbolically, and the one half of the equation should exactly balance the other half. Nothing should be gained or lost. I represent this by a simple reaction, viz., that of oil of vitriol on chalk, and which I may write down thus :—

$$\underset{\text{Chalk.}}{CaCO_3} + \underset{\text{Oil of Vitriol.}}{H_2SO_4} = \underset{\text{Stucco.}}{CaSO_4} + \underset{\text{Water.}}{H_2O} + \underset{\text{Carbonic anhydride.}}{CO_2}$$

Some chemical actions, however, are not so readily understood, as they seem to require the presence of a body which, whilst it is not itself decomposed or altered, appears to have the power of compelling the other substances present to react on each other and undergo chemical change. Such actions were long ago styled "catalytic" actions, or actions of contact.

Under this heading fell many of the more difficult chemical problems, but most of these have now been transferred to the "known" from the darker regions of "catalism." Amongst the few remaining catalytic actions, the majority are what are known as "*fermentations.*" Fermentation may be one of two classes—it may be caused by a *soluble* ferment or by an *organised* body. In the first case the ferment does not appear to increase in quantity during the process; it has no organised structure, and its action is not affected by the addition of chloroform or by compressed air. In this class we have the change which takes place when grain undergoes the process of malting, the starch of the grain being broken up by the ferment diastase, in the presence of water, into dextrin and glucose. The equation is—

$$\text{(Diastase)}\ \underset{\text{Starch.}}{4C_6H_{10}O_5} + \underset{\text{Water.}}{3H_2O} = \underset{\text{Dextrin.}}{C_6H_{10}O_5} + \underset{\text{Glucose.}}{3C_6H_{12}O_6}$$

Cane sugar is not directly fermentisable, but in the presence of the soluble ferment, *invertin*, which invariably accompanies yeast, is converted into the fermentisable glucose :—

$$\underset{\text{Cane sugar.}}{C_{12}H_{22}O_{11}} + H_2O\ (+\text{invertin}) = \underset{\substack{\text{Glucose.}\\(\text{Dextrose.})}}{C_6H_{12}O_6} + \underset{\text{Levulose.}}{C_6H_{12}O_6}.$$

Possibly, however, the most interesting series of these catalytic actions is to be found in the changes brought about in the glucosides when they are brought into contact with water. We take, for instance, bitter almonds, which contain a glucoside, called amygdalin, and a soluble ferment, emulsin; bruise them and mix with water. Almost immediately we note the smell of "bitter almonds," and which is due to the prussic acid that has been liberated during the fermentation instantly set up on the addition of water. The action is written thus :—

$$\underset{\text{Amygdalin.}}{C_{20}H_{27}NO_{11}} + 2H_2O\ (+\text{emulsin}) = 2\underset{\text{Glucose.}}{C_6H_{12}O_6} + \underset{\text{Prussic acid.}}{HCN}. + \underset{\text{Benzoic aldehyde.}}{C_7H_6O}.$$

A further illustration of this class is obtained from salicin (present in willow bark), and which yields by the very same process a substance called saligenin and glucose.

$$\underset{\text{Salicin.}}{C_{13}H_{18}O_7} + H_2O\ (+\text{synapstase}) = \underset{\text{Saligenin.}}{C_7H_8O_2} + \underset{\text{Glucose.}}{C_6H_{12}O_6}.$$

There are many others of the same series. Arbutin passes into hydroquinone and glucose; helicin gives, besides glucose, hydride of salicyl; phloridzin, present in apple and pear bark, splits up into glucose and phloretin; esculin, from horse-chestnut bark, into glucose; and esculetin and

daphnin, in the bark of mazereon, into glucose and daphnetin. One peculiarity of these reactions is that the actual presence of the soluble ferment is not necessary, but its place may be taken by an acid. The pancreatic fermentation and the protëic fermentation, the latter of which causes the solution of the protëin substances in the stomach, belong to this class of catalytic reactions. You will notice that they are all processes of hydration, water being a necessary condition, and in this respect agree with the next series I am to mention.

The second class of fermentations to which I desire to draw your attention differs from the previous series in so far as they *are* brought about by ferments which are *organised*, and which *increase* in bulk during the continuance of the process. Chloroform, which has no action on the soluble ferments, stays or kills the organised bodies, and compressed air is said to have the same effect. The organised ferments are extremely simple forms of life; they lie on the border-line between plants and animals; and whilst some are acknowledged to be vegetable, and others to be animal, yet a considerable number may be looked upon as rather indefinite, and are, in fact, a fighting-ground and the cause of much contention. Luckily, it is unnecessary for us to decide between plant and animal, as it is only on the chemical side we require to look. They are living organisms, and the functions they perform, the chemical actions they decide, can, as a rule, be only carried out by their aid, or if otherwise, then only by extremely round-about methods.

Some of these organisms are well known, and their actions acknowledged. Take, for instance, the yeast plant (*Saccharomyces cererisiæ*), which has the power of converting glucose into ordinary alcohol and carbonic anhydride, and which is regularly used for this purpose. In this case one part of glucose yields two parts of alcohol and two of carbonic anhydride.

$$C_6H_{12}O_6 = 2\,C_2H_6O + 2\,CO_2.$$

Other and secondary reactions also take place, and cause the production of other substances; but these we need not discuss, as they do not alter the main equation. Yeast not only causes fermentation in solutions of glucose, but also directly in solutions of levulose, maltose, and galactose (lactose), whilst indirectly it can also ferment liquids containing cane-sugar, melitose, trehalose, starch, gum, dextrin, and the animal sugar glycogen.

Yeast can also cause fermentation in solutions of other substances, such as malic acid and glycerin, but in these cases the product is not alcoholic, but acid, although carbonic anhydride is given off.

Yeast is not the only alcohol-yielding ferment. It is well known that fruit readily enters into a state of fermentation. In this case the ferment, although belonging to the same family as yeast, differs from it in form and size, and the liquid infusion produced is different in taste. The ferment here is *Saccharomyces apiculatus.*

In both the above cases the ferment requires the presence of oxygen for its growth, and these ferments cannot, therefore, account for the production of alcohol and carbonic anhydride, which takes place when the fruit has been excluded from air. The action in such instances is due to one of two ferments—*Mucor racemosus* or *Mucor mucedo.*

The vinegar which is produced when beers are allowed to come in contact with air is formed by the aid of the organism known as *Mycoderma aceti.* This body is an oxygen liver, and the process of souring can be readily hastened by causing a free access to air. In this country beer-vinegar, or malt-vinegar, is made by the barrel process, which simply consists in filling so many casks half full of beer, and allowing air to enter by the open bung-hole. In time the alcohol of the beer is converted into acetic acid or vinegar, and the vinegar can then be separated by distillation. On the Continent, how-

ever, a much more rapid process is adopted. A large cask, fitted with a false top and bottom, is filled loosely with hard-wood shavings; the false top is perforated with a series of holes, which are filled with cotton wick. The beer is poured into the upper part of the apparatus, finds its way by capillary attraction down the wicks, and trickles over the shavings in a fine stream. A current of air is meantime allowed to pass through the shavings, a large surface is exposed to the atmosphere, and so the process proceeds rapidly. The chemical formula representing the action is represented thus:—

$$C_2H_5, HO + O_2 = C_2H_3O, HO + H_2O.$$

To the same class belong the various vegetable ferments obtained by Hausen (*Bot. Zeit.*, 1886, 137) from the latex of different plants, and which have the power of peptonising albumenoids. Similar results have been obtained by Brasse (*Ann. Agronom.* xii. 200) from green leaves, showing that they also contain an active ferment.

The phenomena of putrid fermentations, or putrefaction, are very similar to those of ordinary alcoholic fermentation. An organised ferment is necessary, and the actions only proceed in the presence of water. Here, however, the substances acted upon are albumenoids, or peptones derived from them, and the products formed are more simple in composition than the materials they are produced from.

Gautier and Etard (*Comptes Rendus*, xciv. (1883) 1598-1601) consider that putrid fermentation may be explained by regarding putrefaction as a breaking up *by hydration* of the complex albumenoid molecule into the simple nuclei which go to make up the albumen.

During putrefaction there are produced aromatic bodies and bases, and if the above theory is correct the albumens are necessarily compounds of the bases with the aromatics. If this statement is proved to be true, then much of the present difficulty regarding the composition of the albumens as a class will have been removed. No series of substances present so much difficulty to the chemist as the albumens do. They are amorphous, non-crystallisable bodies of great complexity, and have up till now baffled all attempts to discover their constitution.

The fermentation or putrefaction of these albumenoids is carried out by various members of the family of organisms known as bacteria. These are unicellular organisms devoid of chlorophyll, and are often aggregated into colonies. Cohn has classified them into—first, those which are globular (sphæro-bacteria), and which are further subdivided into (*a*) simple cells, or micrococci; (*b*) double cells, or diplococci; (*c*) cells in colonies surrounded by a common membrane, or zoogloci; and (*d*) into curious cross-shaped cells, or sarcini. The second division of the family are rod-like, and constitute the micro-bacteria of which the only subdivision is bacterium. Desmo-bacteria are made up of larger rods, or are filiform (filo-bacteria), and are subdivided into straight rods, or baccili, or where curved are known as vibrios. Twisted, or spiral bacteria (spiro-bacteria), are divided into those which are made of long close spirals (spirochæta), and short, open spirals (spirrilliæ).

Chemically bacteria may be classified (*Liborius, Chem. Centra.*, 1886, 579) as—

(1) *Anærobic*, or those which do not require air for their life. The members of this division frequently *do not* lead to fermentation.

(2) *Ærobic*, or those which require air for their existence, and which are reduced to inactivity when deprived of oxygen. In this class we have *Bacillus fuscus*, *B. cyanogenus*, and *B. subtilis*. The members of this group *may* cause fermentation.

(3) *Optionally anærobic*, in which vitality is lowered by the absence of

oxygen, but not totally suspended. This is the pathogenic class, and therefore includes *B. anthracis*, *B. typhi abdom.*, etc.

The members of this latter subdivision are frequently thrown into the ærobic class, as oxygen is undoubtedly necessary for their reproduction.

The substances formed by these bacilli are frequently most energetic, and very often highly poisonous. They contain nitrogen, and are members of the class of substances known as alkaloids. Originally this class of bodies consisted simply of a few organic bases derived from plants, and which, on account of the fact that they were alkaline, and exerted basic properties like the inorganic alkalies, potash, soda, and ammonia, were called vegeto-alkalies or alkaloids. Later, certain animal substances were added to the series (urea); and afterwards, as the science of organic chemistry progressed, a large addition was made in the so-called artificial alkaloids, or compound ammonias. The substances produced by putrefaction have the distinctive term applied to them of *Ptomaines*. This name was first given by Selmi (*Zeitschr. des Œsteri Apoth. Ver.*, March 1, 1878), to a base which he had isolated from exhumed human bodies.

In May of the same year (1878, *Moniteur Scientifique*) Selmi printed a further paper, giving the results of a much more extended research, in which he showed that instead of one ptomin, there were a series of these cadaveric alkaloids obtainable from putrescent animal matter, and he gave the general properties of the class, as also some of the tests. Sulphuric acid he found to give a red-violet coloration, hydrochloric acid mixed with sulphuric acid a red-violet colour, and sulphuric acid with bromine water a red-violet colour which faded. These tests are of interest as being closely allied to a principal test for strychnine.

Being so extremely like the alkaloids in their general properties, they become very important in toxicological cases, and it is of the greatest importance that we should be possessed of some one or more tests which would without doubt show the presence or absence of the class.

Panum proved that all albumenoid substances when allowed to putrefy gave rise to poisonous compounds, and Bergman shortly afterwards described a putrefactive compound which he called "sepsin." Panum and Schweninger continuing the research, showed that the poison produced depended on the stage that decay had reached; in other words, that instead of one body, sepsin, a series of "ptomaines" were formed, and that these substances differed in their physiological actions.

Sonnenschein and Zuelzer, working with the fluid from an anatomical maceration, obtained an alkaloid which had all the characteristics of atropine, and they also obtained a like substance in poisonous sausages, and a further body which produced tetanic symptoms was noticed. Tetanic spasms are also produced by a substance formed during the putrefactive decay of ordinary maize (Lombroso and Erba), and the spasms are accompanied by after-narcotism. This last, however, may be due to the presence of lactic acid or sodium lactate, both of which produce effects very similar to those of morphia. The production of putrefaction compounds may be the cause of the tetanic symptoms traceable to wounds which have not been antiseptically dressed, and the skin diseases which occur after partaking of decomposing fish are doubtless due to "ptomaines."

Sonnenschein's alkaloid has also been obtained from the bodies of patients dying from Typhus Fever, showing a close analogy between the condition of the body during putrefaction and whilst under the fever.

Brouardel and Bouting (*Comptes Rendus*, xcii. 1056) proposed as a distinguishing test the reducing action possessed by the ptomaines on potassium ferricyanide, and which power they stated was not possessed by any of the vegetable alkaloids, excepting only morphine and veratrine. Gautier (*Repert. de Pharm.* ix. 278), however, has shown that this reaction is also

produced by hyoscyamine, emetine, igasurine, colchicine, nicotine, and apomorphine, as well as by a number of poisonous artificial bases, and Tanret (*Repert. de Pharm.* x. 281) has shown a like reaction with ergotinine, aconitine, digitalin, and eserine. No other test has as yet been discovered which will prove decidedly the presence or absence of the ptomaine class, and this knowledge has done not a little to complicate toxicological investigations.

Guareschi and Mosso (*Jour. für Pract. Chem.* xxvii. 425-432) have obtained from washed ox-blood-fibrin, after decomposition for five months, a strongly alkaline brown oil, with a faint conine-like odour, and having the composition of $C_{10}H_{15}N$. Its physiological action is similar to that of curare, but it is less active. Giacomelli (*Zeit. des Œsteri Apoth. Ver.*, March 1st, 1884) has found that during the putrefaction of albumenoids an alkaloidal body is produced which gives many of the tests for picrotoxin, although it differs from that substance in its physiological action. The presence of a similar material in a sample of beer led to the belief that the liquid had been adulterated with cocculus indicus, but after-proof showed that the poison had been derived from the alteration of the albumenoids of the grain.

Brieger (*Ber. der Deutsch Chemisch. Ges.* xvi. 1186-1191) has further shown that during the first stages of the putrefraction of albumenoids poisonous compounds are produced which have actions similar to those of curare, but that these actions disappear after from eight to ten days. He has isolated several of these basic bodies from decomposing flesh. One of them has the composition of $C_5H_{14}N_3$, and is a gelatinous mass with a characteristic and disgusting odour. It forms a series of salts which are readily crystallised in needle-shaped crystals, and which do not possess the disgusting odour of the pure alkaloid. From the residual liquor left after removal of the previous body another and most poisonous substance can be isolated. It has the composition of $C_5H_{11}N$, and a small dose of the hydrochloride caused "a rapid flow of the saliva, strong secretions from the nose, and a constant flow of a watery fluid from the intestines, with finally convulsions." A subcutaneous injection causes increased activity of the heart, rapid respiration, and the saliva becomes alkaline. Cats under its action perspire freely at the paws, and the sweat is decidedly alkaline.

Decomposing flesh has also yielded Brieger neuridine, $C_5H_{14}N_3$, and neurine, $C_5H_{13}NO$. Putrescent fish gave ethylidenediamine, $C_2H_4(NH_2)_2$, muscarine, $C_5H_{15}NO_3$, and the non-toxic gadinine, $C_6H_{17}NO_2$, etc.

It the earlier stages of decomposition in the human subject only choline is produced. After three days neuridine is formed and choline disappears, and is replaced by trimethylamine $(CH_3)_3N$; after fourteen days cadaverine, $C_5H_{16}N_2$, and putrescine, $C_4H_{12}N_2$, appear, accompanied with saprine, which, although isomeric with cadaverine, has very different properties. Up to this point the alkaloids produced are non-toxic in themselves, but are liable to change into highly poisonous bodies, cadaverine readily passing into the very poisonous piperidine, a substance which is closely allied to, and can be obtained from the ordinary pepper alkaloid, piperine. Mydaleine then begins to form, and afterwards mydine ($C_8H_{11}NO$), mydatoxine ($C_6H_{13}NO_2$) and methyl-guanidine are also produced.

Pouchet (*Comptes Rendus*, xciv. 848, c. 220 and 362) and Villiers (*Comptes Rendus*, c. 91) have examined the bodies of patients who have died from cholera, and have isolated an alkaloid of a highly poisonous character, and which when injected into the blood of animals produces well-known choleraic symptoms.

In Typhus bacilla cultivations a very strong and poisonous base, typhotoxine ($C_7H_{17}NO_2$) is found, and tetanus cultivations give tetanine ($C_5H_{11}N$).

Poehl (*Ber. der Deutsch. Chem. Ges.* xvi. 1978-1981) has shown that the epi-

demics caused by unsound bread are preceded by heavy rains and an abundance of the plant ergot (*Claviceps purpurea*). In 1881 the Russian Minister of the Interior instituted a commission to investigate the cause of the ergotismus disease, and the results have shown that the peptic action of the mycelium of the *Claviceps purpurea* converts the albumen of the grain into a peptone, which is readily decomposed into a toxic ptomaine. This body gives tests which might lead the operator to consider morphine as being present, but the absorption power of the two solutions on a ray of light passed through them is very different.

In 1887 an epidemic amongst soldiers in the Punjab was traced to milk, and Firth (*Lancet*, i., 1817, p. 213) found that an alkaloidal body, to which he gives the name *lactotoxine*, was present. The cause of the epidemic was undoubtedly due to putrefaction caused by unwashed vessels. The lactic bacillus also sets up a fermentation in milk, in which the milk sugar, or lactose, is converted into lactic acid. This is the usual souring process in milk. The action is—

$$C_6H_{12}O_6 = 2C_3H_6O_3.$$
Lactose. Lactic acid.

If, however, the sour milk is allowed to remain in contact with air it passes into a further putrefaction, in which the *Bacillus amylobacter* converts the lactic acid of the first decomposition into butyric acid, carbonic anhydride and hydrogen. This action is represented thus:—

$$2C_3H_6O_3 = C_4H_7O,\ HO + 2CO_2 + 2H_2$$

The poison produced by the Anthrax bacillus (*B. Anthracis*) has not, so far as I am aware, been isolated; nor has the body produced by *B. subtilis*, the hay bacillus, been obtained. The Anthrax bacillus belongs to the ærobic, or air-requiring class, and it is most likely that its rapid and deadly action is due to the absorption of the oxygen of the blood, and consequent asphyxia of the patient.

The *Bacillus urea* (*Vibrio*) is found in the urine, the urea of which it converts into carbonate of ammonia.

$$CO(NH_2)_2 + 2H_2O = 2(NH_4)CO_3.$$

This bacillus is frequently followed by another organism, which oxidises the ammonia into nitric acid. It is one of the most important of the bacilli. It is the active agent in the oxidation of the organic matters contained in sewage, when such is employed to irrigate land. Unfortunately, the bacillus does not have the power of killing any pathogenic bacteria present, which may therefore again pass into the water.

Urea itself should most probably be classed in the ptomaines, for Gréhant and Quinguand (*Compt. Rendus*, xcix. 383) have found that when injected subcutaneously it gives rise to tetanic spasms similar to those produced by strychnine, and that death rapidly follows. They have also found in the blood of persons who died from Uræmia a proportion of urea equal to from 0·2 to 0·4 per cent. In connection with this research it may be stated that Villiers (*Bull. de la Soc. Chim.* xliii. 550) has shown that alkaloidal bodies are not present in normal or healthy urine, but indisposition is instantly followed by their production. He further suggests, what is evidently most probable, that should these poisonous substances increase to a greater extent than it is possible for the urine to carry them out of the system, they may cause death. This would go far to show the advisability of supplying an abundance of liquids to patients labouring under certain diseases.

The ptomaines readily combine with arsenic, and Husemann (*Archiv. der Pharm.* xix. 415) suggests that as the compounds of the ptomaines with arsenic are volatile, these bodies may have to do with arsenical paper poison-

ing. It is, however, unnecessary to go so far afield in many of the cases of this kind of poisoning, as we know that they frequently follow the event of a dusting of the room, the removal of solid particles from the cornices, etc., to the air, and thence to the lungs, being quite sufficient to account for the case. It might, however, be of interest if those who have the opportunity of seeing such cases would note especially whether the paste which holds the paper to the wall or the glue size are in an active state of putrescence.

Gautier (*Jour. de Pharm.* xiii. 354 and 401) has obtained from fresh muscle a series of alkaloidal bodies, all of which are crystalline, and which when administered to animals cause sleep, and in some cases vomiting and purging, in a manner very similar to the snake poisons. They are less powerful than the ptomaines, and are known as leucomaines.

Xantho-creatinine, $C_5H_{10}N_4O$, is the most abundant of the muscle alkaloids. It occurs in sulphur-yellow spangles, with a bitter taste, and is soluble in water and in hot alcohol.

Cruso-creatinine, $C_5H_8N_4O$, is a strongly alkaline body, and yields soluble crystallisable salts. It resembles creatinine.

Amphi-creatinine, $C_9H_{19}N_7O_4$, is obtainable from muscle in small quantity only.

Pseudo-xanthine, $C_4H_5N_5O$, is found in the mother liquor after the preceding four alkaloids have been removed. It is yellow in colour, and forms soluble salts.

Two other bases, having the composition of $C_{11}H_{24}N_{10}O_5 + C_{12}H_{25}N_{11}O_5$, have also been obtained by Gautier from muscle.

A further research (*Marino-Zuco Gaz. Chim. Ital.* xiii. 431) has shown that it is possible to obtain from fresh animal substances, such as yolk of egg, brain, lung, heart, spleen, liver, and blood, a material which is identical with neurine, and the author considers that he has thus proved that the ptomaines are not due to the sudden splitting up of the proteids, but to the breaking up of the lecithins under the influence of acids or alkalies.

Brieger (*Ber. der Deutsch Chem. Ges.* xvii. 1137), following up this research, has shown that choline is converted into neurine during putrefaction. These two substances, neurine and choline, have very different toxic properties, for whilst a hypodermic injection of 0·04 grain of the chloride of neurine is fatal to a rabbit weighing one kilo (2¼ lbs.), for a similar effect 0·5 grain of choline hydrochloride would be required.

Mytilotoxine, $C_6H_{15}NO_2$, has been isolated by Brieger from poisonous muscle. The presence of these toxic leucomaines in fresh animal substances is interesting, and gives a possible reason for many cases of poisoning.

Bacteria are abundant in water, even when derived from springs. These microbes are, however, not pathogenic. Pathogenic bacteria when introtroduced into spring water do not multiply (Bolton, *Zeitschrift für Hygiene*), but gradually disappear, those which produce resting spores remaining for the longest period. *Bacillus anthracis* spores were still capable of vitality after the lapse of a year. Typhus bacillus was active after a month, but not after ten and a half months. The bacilli in water, however, would seem to produce a change in the substances dissolved in the liquid, for the oxidisable organic matter decreases, whilst there is an increase in the amount of ammonia. After a time the ammonia becomes oxidised into nitrates and nitrites (Leone, *Gaz. Chem. Ital.* xvi., p. 505). During nitrification atmospheric oxygen is necessary. In the presence of carbonic anhydride (CO_2) the bacteria decrease (Sohnke, *Chem. Centr.*, 1886, p. 699), and are not capable of reproduction so long as the gas is present.

In these notes I have tried to lay before you as shortly as possible the

main points contained in the mass of investigations which have been made since Selmi first isolated his ptomain. The field is still open, and the work as great as ever it was. No more interesting subject can be found, and none that will better repay the labour expended. To obtain a substance which will kill the bacteria without proving toxic to the patient may be difficult, for Hatton has shown that many of the forms can live indifferently in an atmosphere of air, oxygen, nitrogen, hydrogen, carbonic oxide, carbonic anhydride, cyanogen, sulphurous anhydride, nitrous oxide, sulphuretted hydrogen, nitric oxide, acetylene, and coal-gas. Some of these gases, indeed, they possess the power of utilising. Carbonic oxide is oxidised into carbonic anhydride—hydrogen and marsh-gas being also produced; cyanogen becomes carbonic anhydride and nitrogen; nitric oxide passes into nitrogen and carbonic anhydride.

Solutions of salicylic acid, strychnine, brucine, morphine, and narcotine do not kill bacteria, but phenol, alcohol, permanganate of potassium, and spongy iron are fatal to the organisms. Probably oxidising substances, if given in weak solution, might prove useful, as, indeed, has already been found to be the case in the application of chlorine water in cases of diphtheritic throat, etc.

Mr. Robinson, F.R.C.V.S., in proposing a vote of thanks to the lecturer, said, My Lord, Ladies, and Gentlemen,—I rise to propose a vote of thanks to Professor Macadam for the very interesting lecture which he has just given us; and I am very glad to see such a big crowd here to welcome Professor Williams on this occasion. Between students and friends, really I do not see where another person could be crushed in. (Applause.)

Mr. Elphick, M.R.C.V.S., in seconding the vote of thanks, said, My Lord, Ladies, and Gentlemen,—It gives me great pleasure to second this vote of thanks to Professor Macadam for his very able address. I am sure that I am only speaking the sentiments of all present, when I say that we were very much interested in what we have heard, and I must say I have been highly interested, and would not have missed the lecture for a considerable consideration. And as to you students, I would seriously recommend it to your earnest consideration. I have not the slightest hesitation in saying that the lecture we have heard will tend at some future date to elucidate many obscure diseases that we have to contend with, and will guide us in our future treatment and study of surgical diseases. (Applause.)

Professor Macadam thanked them for the vote of thanks, and said that as the years went on he was always more and more glad to get to work again. The subject which he put before them might lead some, at least, to think that there was a connection between chemistry and disease; that was the intention of the address. (Applause.)

Principal Williams, in proposing a vote of thanks to the chairman, said, Ladies and Gentlemen,—It affords me extreme pleasure to ask you to join me in giving a vote of thanks to our chairman, Lord Haddington, for the very high honour which he has done me and this institution, and the great privilege we have all had in listening to his remarks here to-day. (Loud applause.) I think you will all agree with me that when his lordship was born to the very high estate which he has inherited, the profession of veterinary surgery lost a very good member. (Applause.) In all his observations to-day you would observe that he has closely followed the progress of our profession. He remembers, as I remember, the peculiar ideas that we had in the old days about the "stirring up" of humours and so forth. I think my memory serves me better, for I remember that the first course of physic was for "stirring up" the humours, the second for "floating" them, and the third for "carrying them off." Many a time and oft do I remember, ladies and gentlemen, that the animal was carried off. (Laughter.) In connection with this

subject, Principal Williams went on to say that he wished to transgress for a little from the main point, and refer to certain alterations which had been made in the law in regard to Pleuro-pneumonia since they last met there. Cattle that were attacked with Pleuro-pneumonia had now to be slaughtered at the public expense. He did not object very much to that, but he regretted exceedingly that before the Government took this very great step they should not have given greater facilities—a further chance—by making a great experiment as to the utility of inoculation in arresting Pleuro-pneumonia. He certainly believed that inoculation would have been a much more economical method of dealing with Pleuro-pneumonia than slaughter. The Government had destroyed the chances of making a great scientific discovery—whether it was really the truth that inoculation would have prevented the spread of the disease. He regretted this very much. He thought that before the Government did this they should have given a chance of making this experiment. What would £10,000 be to the Government of a great country like this? A vote of £10,000 might have been allowed for the experiment, even if it proved a failure, and then slaughter might be brought into force. Slaughter, however, had now come into force, and the experiment was knocked on the head. He also objected to the method of compensation. When cattle had to be slaughtered he maintained that they should be paid for out of the imperial exchequer. It was abominable that the local authority should have to pay for these animals. A case happened last month in which cattle were brought into this city on the Tuesday, and sold in the market to a farmer in the country. One was challenged in the market as being unwell, and either that day or the next died from Pleuro-pneumonia. These cattle had to be slaughtered and paid for by the county of Edinburgh. The day before they were in Glasgow, and a day or two before that they were in Dublin, where they probably contracted the disease; but because the disease was detected in the county of Edinburgh, the county had to pay the whole expense. He said distinctly that the compensation should come from the Government if they be slaughtered for the prevention of the spread of the disease. This tax should come from the public at large, and not from one single district. There was another matter that was getting a great deal of attention, and that was Tuberculosis. It was now conceded on all sides that Tuberculosis was a contagious disease. He had no hesitation in saying it. There was only one "power *that be*" that seemed to doubt it, and from a leading article the other day in a veterinary paper, it seemed that that power was the head of the Privy Council in London. But there was no doubt about it; it was proved by scientific experiment. If an animal was inoculated with the bacillus the disease was brought on; and if human beings were inoculated by it—as they often were, by milk from cows—it brought on Consumption, that dreadful malady which carried away the fairest and brightest in this country. It was quite right that all animals suffering from Tuberculosis should be slaughtered and their carcases destroyed. But who was to pay? The Government did not recognise it as a contagious disease. A cow suffering from Tuberculosis was sent to the slaughter-house, killed, and examined. The carcase was condemned, and the owner was taken to the court and fined. He lost his cow and paid a fine, although he might have been unconscious of the existence of the disease. Let Tuberculosis be under the Contagious Diseases (Animals) Act, and let them endeavour to eradicate it. The man who could discover anything that would destroy the bacillus would be one of the greatest benefactors to the human race that ever lived, and would be adequately rewarded. Let them put their shoulders to the wheel and eradicate this disease. Men who were put at the head of the slaughter-houses should be scientists, men who could use the microscope and determine whether or not an animal was affected with Tuberculosis. He

could order its destruction, and save men from being taken to court and fined £20 by a bailie. (Laughter and applause.)

Mr. BRIGGS, F.R.C.V.S., in seconding the vote of thanks, remarked that it would not have been an easy matter to get a chairman so admirably qualified as his lordship, and he thought that so long as Professor Williams and that institution were supported by the ability of such gentlemen their profession would succeed. Professor Williams was an old friend of his, whom he knew before he became Professor, and he was certain that throughout the land there was no man more popular in his profession. (Applause.)

The CHAIRMAN, in returning thanks, said, Ladies and Gentlemen,—I beg to return my sincere thanks for the kind reception given me, and the kind way in which you have received the vote of thanks which has been given to me for my imperfect services here to-day. My remarks must be brief, and I will simply say that I concur with what has fallen from the Principal in regard to Pleuro-pneumonia, and the hardship entailed by paying compensation which, I also think, ought to come from the imperial purse. I will take the first opportunity of bringing the subject home in the proper quarter. (Applause.) I wish all success to the New Veterinary College, and hope this session may be an important and successful one; and I also wish every success to the students of this college, and hope that with their industry, efforts, and knowledge of the veterinary art they may become benefactors of mankind by assisting them in the recovery from suffering of animals of all kinds. (Loud applause.)

DICK'S VETERINARY COLLEGE.

THE sixty-sixth session of the Royal (Dick's) Veterinary College was opened on October 3rd, by the delivery of an address by Principal Walley, in the large lecture-room of the college, Clyde-street, Edinburgh. Bailie Turnbull, who occupied the chair, said that last session had been most successful. The success of the students at examination for the College diploma of the Royal College of Veterinary Surgeons seemed to have been most excellent. During the past year the Fitzwygram first and second prize of £50 and £30 had been gained by two students of this college, who not only took a high place in the class competition, but were also the only students who passed the examination with honours. At the competitive examination for the Army the students of that college had taken a distinguished place. Principal Walley, who was received with cheers, said that he proposed to consider the advancement made in their profession from a medical and surgical point of view since last they met. At present there were few potent drugs in the sister profession that were not equally used in their own, and in spite of difficulties they had to contend with, they were as successful as the members of the more favoured sister branch, and were as successful in their diagnosis, notwithstanding the fact that they had no means of getting help from their patients. Principal Walley then alluded to the disease of Roaring in horses, saying that the method of tracheotomy would in the long-run prove to be the best. He regretted the action taken by some members of the medical profession in reference to the transmittibility of Scarlet Fever by the cow. As a veterinary surgeon, he positively affirmed that there was no disease met with in the cow that bore the slightest analogy to the Scarlet Fever of the human subject. Speaking of Pleuro-pneumonia disease, he said that if all the centres of disease were effectually destroyed the disease must cease to have existence. In regard to inoculation, his conviction as to its inutility had not been shaken, nor his views altered, by the inquiries carried out by the Departmental Committee. If the recommendations of the Committee on Tuberculosis were adopted they would be of untold benefit to the raiser, importer, and consumer of stock. A vote of thanks to the lecturer, on the motion of Bailie Cranston, terminated the proceedings.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE eighteenth annual general meeting of the above Society was held on the 4th inst., at the First Avenue Hotel. In the unavoidable absence of the President (Mr. Charles Sheather), Mr. Wragg, Vice-President, occupied the chair.

The following gentlemen were present: Professors Axe and Pritchard, Messrs. Broad, H. D. Gibbings, A. Gostling, W. S. Harrison, W. Hunting, T. Moore, W. J. Mulvey, F. T. Oatway, W. S. Reid, Irwin Roberts, J. Rowe, William Roots, H. G. Rogers, Frederick Smith, W. F. Shaw, J. Woodger, and the Secretary.

Letters of apology for non-attendance were received from Professor Walley and Mr. H. Edgar.

The CHAIRMAN said the first matter for their consideration was the question of electing Mr. William Hunting as an Honorary Fellow of the Society. At a meeting of the Council held on 5th July last it was unanimously resolved to ask the Society to confer this honour on him, in recognition of his good services during several years.

Professor AXE said Mr. Hunting had rendered signal service to the Society, and he thought, having regard to the fact that he had held the office of Secretary, and that that office was purely a voluntary one, unattended by any remuneration, the least they could do was to recognise his labours on their behalf by conferring on him the distinction which the Council had suggested. He had therefore great pleasure in proposing that Mr. Hunting be made an Honorary Fellow of the Society.

Mr. ROWE said it afforded him very great pleasure to second the proposition. Mr. Hunting was a gentleman who deserved well at their hands, quite apart from his position as a member of the Society.

Mr. Hunting was then by ballot unanimously elected an Honorary Fellow.

Mr. W. C. B. Dickenson, F.R.C.V.S., of Boston, Lincolnshire, and Mr. A. Gostling, M.R.C.V.S., of Regent's Park Road, London, were elected Fellows of the Society.

Mr. W. S. Reid, M.R.C.V.S., was nominated for Fellowship.

The SECRETARY read the balance-sheet for the past year, which showed the Society to be in a good financial position. Messrs. Roots and H. G. Rogers were auditors of the accounts. After some discussion, the balance-sheet was adopted, on the motion of Professor AXE, seconded by Professor PRITCHARD.

The election of officers for the session 1888-89 was then proceeded with, and—

Professor PRITCHARD said he wished to propose for the office of President Mr. Alfred Broad. It was well known to all of them what good service he (Mr. Broad) had rendered to the Society. He had acted as Honorary Secretary for seven years, and there was no doubt he would make an efficient President.

Mr. WILLIAM ROOTS had great pleasure in seconding Professor Pritchard's proposition.

The following officers were then elected by ballot:—

President—Mr. Alfred Broad, F.R.C.V.S.

Vice-Presidents—Professors Axe and Pritchard; Messrs. T. Moore and F. Wragg.

Members of the Council—Messrs. H. D. Gibbings, A. Gostling, W. Hunting, W. S. Harrison, W. T. Mulvey, F. Oatway, F. Raymond, W. Roots, J. Rowe, F. G. Samson, C. Sheather, and F. Smith.

Mr. Joseph Woodger was re-elected Honorary Treasurer; Messrs. Roots

and Rogers were elected Auditors; and the Honorary Secretary was also re-elected.

It was announced that the annual dinner would take place on the 1st of November next, at 7 p.m.

A vote of thanks to Mr. Wragg for occupying the chair brought the proceedings to a close. SIDNEY VILLAR, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on Sept. 12th.

Present: J. B. Wolstenholme (president); Dr. Fleming, C.B.; W. Hunting, London; Messrs. Peter and W. A. Taylor, Thos. Greaves, W. Dacre; John Moore, T. Hopkins, Sam. Locke, E. Day, A.V.D., all of Manchester; Messrs. Wm. Whittle and Arthur New, Worsley; Wm. Woods, sen., Wigan; R. C. Edwards, Chester; J. G. Mayor, Kirkham; Jas. Hart, Oldham; Thomas Briggs, Bury; H. Cooper, Huddersfield; F. Whittaker, Farnworth; Thos. Dolie, Birkenhead; Jas. Marshall, Knutsford; J. R. Charlton, Wexford; R. C. Reynolds, Geo. Morgan, and the Secretary, Liverpool.

Letters of apology, regretting their inability to attend, were received from upwards of twenty members and friends.

The President nominated Mr. R. Hughes, M.R.C.V.S., for membership of the Association.

Proposed by Mr. W. A. TAYLOR, seconded by Mr. WHITTLE, that the amended rules be adopted.—Carried unanimously.

Dr. FLEMING then opened the adjourned discussion on Roaring. He discoursed at length his views and opinion of the affection, and in an able manner gave detail and statistics in connection with the new laryngeal operation. He also delivered some very interesting remarks concerning the Duke of Westminster's Ormond.

Mr. GREAVES debated at some length, being followed by Messrs. Hopkins, Peter Taylor, R. C. Reynolds, W. Dacre, J. G. Mayor, W. A. Taylor, Thos. Briggs, the Secretary, and others.

At the conclusion a very cordial vote of thanks was voted to Dr. Fleming, and which was carried with acclamation.

The usual vote of thanks to the President concluded the meeting.

ARTHUR LEATHER, *Hon. Sec.*

ROYAL SCOTTISH VETERINARY SOCIETY.

THE quarterly meeting of the above society was held on October 3rd, in Dick's (Royal) Veterinary College Buildings, Clyde-street, Edinburgh. Principal Walley presided over a fair attendance, and after the routine business had been conducted a discussion was raised on the report of the Departmental Committee appointed to inquire into Pleuro-pneumonia and Tuberculosis in the United Kingdom. The chairman said that as far as he was personally concerned he was more than pleased with the report. There was one statement, however, dealing with Tuberculosis which he thought was a slur on their profession, namely, that there would be no difficulty in diagnosing cases of Tuberculosis. Mr. Campbell, Kirkcudbright, also expressed himself highly satisfied with the report. In connection with the inspection of meat, he thought that, as a general rule, new members of the profession had a good knowledge of morbid anatomy. Instead of medical men being appointed inspectors of meat markets, they should ask the advice of junior veterinary surgeons. Mr. Pottie, Paisley, referred to the "compensation clause" as satisfactory. Mr. Campbell moved that the discussion be adjourned till next quarterly meeting, when possibly a recommendation to the Government could

be drawn up. This was unanimously agreed to. It was agreed to change the date of the annual meeting of the society from September to October. This was all the business of importance.

LINCOLNSHIRE VETERINARY MEDICAL SOCIETY.

THE next meeting will be held at Huntingdon, on Thursday, November 22nd, when Professor J. W. Axe, of the Royal Veterinary College, will deliver a lecture on "Lessons in Laryngotomy and Laryngo-tracheotomy, as applied to Roaring," and also exhibit specimens showing the reparative process following the operation.

Members of the profession are cordially invited to be present.

THE CALCUTTA VETERINARY ASSOCIATION.

IT says much indeed for the robustness and zeal of our colleagues in Calcutta, that they have summoned courage to establish an association "for the interchange of ideas, and the discussion of subjects connected with veterinary science;" which shall also "invite medical men, and gentlemen interested in sport and subjects connected with veterinary science, to become Honorary Members."

There is ample work and material for such a society, and it should be productive of much benefit to its members, and help to disseminate interesting and important information to the entire profession.

The organisation of the Association augurs well for its future. Though it can only at present boast twelve or thirteen members, yet these are well known for their energy and scientific ability. We learn that at a meeting held at Calcutta on September 6th, Mr. Greenhill was elected President, Mr. Spooner-Hart Vice-President, and Mr. T. Assheton Smith, Honorary Secretary and Treasurer. A working Committee was also appointed, consisting of the President, Vice-President, R. A. Turnbull, S. T. D. Symons, and the Honorary Secretary.

This, the latest addition to our veterinary societies, has our very best wishes for its prosperity, and any assistance we can afford it will be gladly given.

CENTRAL VETERINARY SOCIETY OF FRANCE.

THE French Minister of Agriculture has just bestowed the annual subvention of 5,000 francs (£200) from the large grant made by the Government for the encouragement of agriculture, to the Central Society of Veterinary Medicine, for its maintenance. This Society every year devotes 2,000 francs (£80) for the purpose of awarding prizes to those members of the veterinary profession in France who contribute the best works on subjects connected with veterinary matters (Pathology, Hygiene, Therapeutics, etc.), the decision as to the merits of these being left to a Commission appointed by the Society. The prizes are in the shape of gold, silver, and bronze medals, and their distribution has been made within the last few days to a large number of competitors.

Obituary.

The following deaths of members have been reported during the month:—

L. McKirby, Rothesay, Bute	Graduated	1873
R. Hopkins, Pontypridd, Glamorganshire ..	,,	1867
T. H. Prior, Dublin	,,	1879
J. Johnson, Penicuick, Midlothian	,,	1842
S. Revill, Ilkeston, Derbyshire	,,	1857

Army Veterinary Department.

Gazette, October 2nd.

The under-mentioned Veterinary Surgeons to be Veterinary Surgeons First Class, dated 5th October :

Richard H. Ringe, Robert Pringle.

Veterinary Surgeon Gerald H. Fenton to be retired, receiving a gratuity. Dated 5th October.

Gazette, October 9th.

Veterinary Surgeon William R. Hagger to be Veterinary Surgeon First Class, dated 13th July.

Robert J. D. Tibaldi, gent., to be Veterinary Surgeon on probation, dated 10th October.

Veterinary Surgeon First Class W. Gladstone has embarked for a tour of service in India. Veterinary Surgeon First Class J. A. Nunn has returned to England from his special mission to South Africa. Professor Steel has been allowed an extension of sick leave, and admitted as a patient to the Military Hospital, Netley.

It has been decided that Veterinary Surgeons attached to the Remount Department shall retain their appointments for five years, their names being removed from the roster of Foreign Service during that period.

The *Lahore Gazette*, alluding to the most recent military expedition in India, remarks: "In our issue of the 17th, we stated that, so far as we were aware, no arrangements for the veterinary care of the animals accompanying the Black Mountain Expedition had been made. We learn now that Veterinary Surgeon First Class Ewing, has been detailed to take charge. If one veterinary officer is sufficient to take care of some four thousand animals, surely the number of medical officers ordered up must be superabundant, when we consider the infinitely harder usage that falls to the lot of the four-footed campaigner? If the Indian tax-payer had any voice in these matters he would assuredly want to know why, if one veterinary officer is sufficient to look after six lakhs of rupees' worth of animals—for which he has to pay—about 36 medical officers are despatched to attend to the medical wants of the men, who, as far as native troops are concerned, can be replaced at less expense. From a purely humanitarian point of view, an agent of the P.C.A. Society might still advantageously accompany the expedition."

Notes and News.

Transmission of Actinomycosis from Man to Man.—Dr. R. Baracz, of Lemberg, in a recent number of the *Przeglad Lekarski*, reports two cases of Actinomycosis in man. In the first a small painful swelling over the left lower jaw developed after the extraction of a tooth. The tumour which was of the size of a walnut, showed distinct fluctuation over some parts, and could be moved on the bone. Its margins were solid. The skin over the swelling was red, and hotter than natural. The patient could open his mouth only slightly and with pain. The unusual appearance of the tumour, its slow growth, and the fact that the patient was a cabdriver, caused Actinomycosis to be suspected. The man, however, did not sleep in the stable, and he had not been in contact with any animals but his own, which were healthy; he used, however, to buy the hay for his horses himself. Dr. Baracz incised the

tumour at two spots where there was distinct fluctuation, with the view of performing a radical operation if the microscopic examination of the contents of the abscess confirmed the diagnosis of Actinomycosis. The cavity was washed out with a five per cent. solution of carbolic acid, and an iodoform dressing was applied. The microscopic examination proved that the suspicions were correct, but as the patient had a fainting fit during the opening of the abscess, he would not consent to any further operation. The wound healed in a couple of weeks, and no trace of the swelling remained ; the patient felt quite well. In the second case the patient was a woman, aged twenty-three, who was betrothed to the cabdriver whose case has just been described. She had an abscess of the size of a walnut on the alveolar process of the left lower jaw. The abscess was opened, and half a coffee-spoonful of pus discharged from it ; an antiseptic dressing was applied. Microscopic examination revealed the presence of Actinomycosis. The wound healed in a short time, and only a solid prominence remained behind over the spot. A second small abscess formed later on on the alveolar process of the left upper jaw, which burst spontaneously and soon healed. Though the etiology was not quite free from uncertainty in the first case, there could be no doubt as to the transmission of the disease from the man to the woman.

Poisoning of Horses by Ranunculus Arvensis.—The poisoning of horses belonging to Mr. William Gray, farmer, Gamlingay, and some valuable cattle through eating some wild plant, has been further investigated. Just prior to the death of the horses they had been eating tares, and among these tares was a quantity of another deadly poisonous plant, namely, the arable land crowfoot (*Ranunculus arvensis*), locally known as "beggar's lice." There are well-established records of cattle being killed by this plant, with all the appearances in the stomach that were presented in the cases of the horses.

Cake and Pudding Affection in Animals.—The *Illustrated Sporting and Dramatic News* has the following :—" A correspondent kindly sends me a story from Christchurch, New Zealand—English horses have not these quaint tastes —and here it is. In a stable in this city there is a horse entertaining a most cake and pudding affection for a hen. The hen has an equally strong and equally strange affection for the horse. Only in the horse's manger will the hen lay, and the horse waits with more or less patience until the egg has been 'shed.' He then, with a most unnatural appetite for an equine, quietly swallows the egg, and does so with the greatest gusto imaginable. The hen will lay nowhere else but in this particular manger, and when 'Chuckie' is taking, to the horse's thinking, too long a time to deposit the coveted morsel, the horse opens his soft lips, lifts the hen by the tail to see if the egg has been laid, and, if it is, quietly appropriates the delicate morsel. If it is not, he becomes quite restless until the little delicacy he has been waiting for is 'passed,' but he will have the egg, and his fondness for the hen who thus supplies him is unbounded. The story appears incredible, but the horse's owner is perfectly willing to convince anyone to the contrary."

Canine Suicide.—The latest case of canine suicide is reported in a new Indian paper, *The Argus*, from Calcutta. An engine with cars attached, was seen coming down the line, when a pariah dog was seen to cross the road towards the approaching cars, and deliberately lie down on the line just in front of the engine. The "cow-catcher" failed to remove the animal, which was cut in two by the wheels of the cars.

Bird Instinct.—It is reported that in Peru and other parts of South America, this year's fruit has been avoided by birds, while it has caused the death of cattle and sheep, when fed on it in large quantities. These obser-

vations have been cited as tending to show that the instinct of birds with respect to the wholesomeness of fruits is frequently a worthy guide for human beings to follow. The possibility is suggested that the variation in the fruit of different years may have something to do with outbreaks of Cholera.

Stray and Rabid Dogs in London.—From official statistics issued recently, it appears that during September, 1021 stray dogs were seized in the Metropolis by the police; twenty-four of the animals were killed in the streets, "as mad or ferocious," nineteen by the police, and five by private persons. During the above period seven police officers and ninety-six civilians were bitten by dogs not suspected of being mad, and one individual by a dog certified to be suffering from rabies. The 1021 dogs were all taken to the Home at Battersea.

Protracted Incubation of Rabies.—The *Sémaine Médicale* reports that a man named Sinardet, aged twenty-six years, bitten by a rabid dog on April 26, 1886, and treated at the Pasteur Institute from May 3rd to the 12th, 1886, died of Convulsive Rabies at the hospital of Bourg on July 28th, 1888, twenty-seven months after the anti-rabic treatment.

Dishorning of Stock.—The Tennessee Agricultural Experimental Station has issued a report on the subject of dishorning cattle. The conclusions to which the experimentalists have come are that—(1) For removing the horns, an ordinary meat-saw is perfectly satisfactory. (2) The horns should be removed as close to the head as possible, without cutting the skull proper. The sawing should be done rapidly, and with long sweeps of the arm if possible. (3) Animals one and two years of age appear to suffer considerably in dishorning. The painful effects decrease with increase of age, so that an animal of ten years old may suffer but very little. This is owing to the layer of flesh surrounding the base of the horn, which is much thicker in young than in old animals. Dishorning causes an abnormal increase of pulsation and temperature, which extends over several days. The appetite is also affected during the twenty-four hours succeeding the operation. (4) Dishorning is more especially to be recommended for those animals that are of vicious temperament, that are what are termed "masters;" to be applied to bulls, and to beef animals that are to be kept quiet and closely stabled or shipped. (5) From evidence quoted from other sources, it appears that dishorning is not necessarily a cruel practice, but may be conducted to promote ends that are both humane and desirable in live-stock breeding. Mr. Sadler, British Consul at Chicago, reports that in his very extensive district the system of dishorning or dehorning cattle is rapidly increasing. Some farmers have dehorned their whole herd. It has been calculated that 200,000 cattle and horses die each year in the United States from horn-thrusts. The advocates of the system of dehorning claim that, besides lessening this loss and that of human life, much shed-room is saved, less hay is consumed, there is less turmoil from restive animals, and that cows, being more quiet and docile, give more milk. In the case of calves the horn is extracted by a gouge or punch when two or three months old, and with full-grown animals the horn is sawn off at the point where the matrix joins the bone horn, and should be done early in the spring. If sawn higher up the horn grows again; if below, the process of granulation would not take place.

Hog Cholera in the United States.—Mr. Hayes Sadler, British Consul at Chicago, in a recent report on the agriculture of his district, which includes all the States and territories west of Illinois and Lake Michigan to the Rocky Mountains, refers to hog breeding and disease. He says that there has been sufficient admixture of high-class breeds to bring the swine up to a high standard, and to leave little to be desired in the form and quality of those

brought to the packing-houses. But simultaneously with this improvement in grade various diseases have developed themselves. Formerly the ugly-shaped native hogs roamed in a half-wild state and found their own living; now they are bred in an artificial manner, kept and fed in pens, and possibly this indolent and civilised existence may be one cause of the increased disorders to which they are now liable. No definite decision as to the nature of the Hog Cholera and other diseases, or as to the remedies for them, has yet been reached, notwithstanding much investigation. Meanwhile the losses are enormous, entire herds of hogs being carried off in a week by disease arising from no known cause, with no known means of checking the disaster. It is said that the dead animals are occasionally sold, and even enter into the composition of lard, butterine, or soap; but Mr. Sadler thinks it is scarcely possible to credit these statements without substantial proof, in the face of the inspection which exists at the stock-yards. There is no general law for the disposal of hogs which have died of disease, and in fact the laws of Iowa provide that they may be turned into lard and sold if the latter is marked "Lard from hogs which have died of disease."

Correspondence.

THE LATE PROFESSOR ROBERTSON.

DEAR SIR,—Would you kindly allow me space to inquire as to the present position of the Robertson Memorial Fund? Your readers may remember that eight months since an appeal was made to students and members of the veterinary profession. This appeal, characterised by much temporary energy, had for its object the purchase of a memorial bust. For six months there has been no evidence of vitality in the matter, or any movement to give publicity as to the amount at the disposal of the executive. Are we to regard this inactivity as a deplorable sign of the degenerate age in which we live? or are the subscribers to remain in a hope that they will soon be invited to witness the unveiling of the artist's work? I can hardly conceive how men can so soon forget, and allow to pass unmarked and forgotten, the masterly energy and kindly interest ever displayed by our late Principal and friend. Professor Robertson started a great work in our Veterinary Medical Association; why should not that society, which owes him so much, now come forward, and if the money cannot be obtained otherwise, make up the deficiency out of the large surplus now at their disposal, rather than let the memory of a man whose life of energy shows such an example for us to follow fall to the ground (for we have shown how soon we can forget)?

Royal Veterinary College, *October 18th.* J. HAROLD BOOTH.

ANATOMY AND PHYSIOLOGY.

SIR,—In reading the proceedings of the Midland Counties Veterinary Association, as reported in the Journal for this month, I find myself much bothered as to my notions with regard to the anatomy and physiology of the horse's larynx. One speaker said the vocal cord had nothing to do with Roaring, and that removal of the arytenoid cartilage would render a horse liable to choke; another speaker considered the vocal cord composed of *white* fibrous tissue; while another speaker said he had *removed both vocal cords*, "and rendered my unfortunate animal dumb"! What was this unlucky animal? Was it a talking one, like Balaam's ass, before being deprived of both its vocal cords? And what was the object of the

operator? The previous speaker had mentioned that it was upon the control of the muscles over the chordæ vocales that our great singers are enabled to produce high and low notes; and the excisor of the voice-producing bands agreed with that statement, and gave his own experience as to the unhappy effect of their removal. Was the unfortunate animal a "musical" one, in the horse-coper's sense of the term? If so, then the operation appears to have been eminently successful, and the operator should be congratulated on having succeeded in producing dumbness. But the other anatomical and physiological references rather disturb my working notions on these subjects. Can you or any of your readers put me on the clear track again?

October 20th. CRUX.

A QUESTION OF PLUMES.

MR. EDITOR,—In one of the busy and fashionable streets to the west of Regent Street, London, parallel with, and not many hundred yards from it, an M.R.C.V.S. has on his sign-board above the entrance to his establishment, in addition to name, "Veterinary Surgeon to H.R.H. the Prince of Wales," and, of course, the Prince of Wales's plumes. Now, sir, I wish to know what entitles members of a profession to use this designation and suspend the plumes. I am aware that tradesmen who supply the Prince with commodities, and persons who perform certain duties for his establishments, even down to the chimney-sweeps, are, if actually appointed, privileged to announce as above. But I have never heard of the professional men whom His Royal Highness employs so designating themselves, on signboards at least. Of course we can understand a farrier doing such a thing, for he is a tradesman and artisan; but an M.R.C.V.S. should consider himself something higher than a tradesman, and therefore above adopting tradesmen's artifices to draw business.

Again, sir, can you inform me if any penalties attach to borrowing the designation and the feathers without permission, or without being at the time a royal tradesman? STERLING METAL.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from G. T. Pickering, York; S. R. Howard, Ohio, U.S.A.; J. H. Steel, A.V.D., Bombay; T. Assheton Smith, Calcutta; A. J. Haslam, Karachi; Professor Müller, Berlin; J. H. B. Hallen, Simla; H. Gray, London; R. W. Burke, A.V.D., India; G. R. Griffith, A.V.D., Cairo; A. Leather, Liverpool; J. Brodie Gresswell, Louth; Sidney Villars, Harrow; A. W. Hill, Esq., London; J. H. Booth, London; C. Hartley, Lincoln; "Sterling Metal"; "Crux."

BOOKS AND PAMPHLETS: *Prof. Müller*, Bericht über de Königliche thierärztliche Hochschule in Berlin, 1887-8; *Dr. N. Lanzillotti Buonsanti*, Tratattato di Tecnica e Terapeutica Chirurgica, etc.; Degli Animali Domestici; *W. Collier, M.A., M.D.*, Hydrophobia: a Review of Pasteur's Work; Bericht über Thierärztlicher Verein von Elsass-Lothringen; "Thormanby," The Horse and His Rider.

JOURNALS, ETC.: *Cincinnati Lancet; Clinic; Lancet; Revue Vétérinaire; British Medical Journal; Recueil de Méd. Vétérinaire; Hufschmied; Clinica Veterinaria; Echo Vétérinaire; Wochenschrift für Thierheilkunde und Viehzucht; Annales de Méd. Vétérinaire; Edinburgh Medical Journal; American Live Stock Journal; London Medical Record; Medical Press and Circular; Giornale di Veterinaria; Journal de Médecine Vétérinaire et de Zootechnie; Journal of National Agricultura Society of Victoria; Veterinary Record; Live Stock Journal; Thierarzt.*

NEWSPAPERS: *Lahore Civil and Military Gazette; Ross Gazette; Gazette del Popolo; Edinburgh Evening News; Scotsman; Dublin Evening Telegraph; Pioneer.*

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

DECEMBER, 1888.

REMARKS ON THE ETIOLOGY OF SWINE-FEVER.

BY E. KLEIN, M.D., F.R.S.

In his most recent publication on Swine-plague Mr. Salmon maintains (Report of the Commissioner of Agriculture for the year 1886) that the infectious disease of swine known in America as Hog Cholera or Swine-plague, in this country as Swine-fever or Swine-plague, really comprises two different infectious diseases: (1) one disease is chiefly localised in the large intestine—hæmorrhagic ulcerative Enteritis—this is the Hog Cholera; (2) the other is chiefly an affection of the lung, the Swine-plague.

These statements are irreconcilable with the experimental evidence which I published in 1878 (Reports of theMedical Officer of the Local Government Board for 1877-78), and with the observations made also on the disease naturally occurring amongst swine. I have shown in that report, by numerous experiments, that by inoculation or by feeding of healthy pigs with particles of the diseased lung, or of the ulcers of the large intestine or of the peritoneal exudation, the same disease is produced; from the *post-mortem* examination of such experimental animals, as well as those that had become naturally affected with the disease, I have shown that it is chiefly the lung, next also the large intestine, which is subject to the disease, and I have therefore spoken of it as infectious Pneumo-enteritis. By injection as well as ingestion of matter taken from the ulcers of the large intestine, I have produced in healthy pigs the typical disease of the large intestine and also of the lungs; further, by injection of matter taken from the

diseased lung I have produced in healthy pigs the typical disease, both of the large intestine and of the lung. There can be no question, from an inspection of my records of *post-mortem* examinations of these experimental animals (*l.c.* pp. 183—207, experiments i.—xxii.), about the unity of the pulmonary and intestinal disease. An appearance to which I have drawn attention in the above report, is the hæmorrhage in the endocardium, chiefly of the left ventricle about the mitral valve (*l.c.* plate xxii., fig. xxxi.). These hæmorrhages were seldom missed on *post-mortem* examination of the animals affected naturally or experimentally, either with lung disease, with simultaneous intestinal ulcerations, or with lung disease only. During this year I have had the opportunity, thanks to Mr. C. Humphrey, veterinary inspector in Wandsworth, to notice an isolated epidemic of Swine-fever that had occurred in the farm belonging to and supplying the county asylum at Wandsworth. This epidemic is instructive, because it occurred in a positively isolated locality; that is to say, a locality that does not stand in any communication, either by the attendants or by purchases and introduction of fresh pigs, with the neighbourhood. On this farm the number of pigs generally present is just over 100, when fresh farrows about 200. The supply of pork, owing to the large number of inmates in the asylum, is very considerable, and is all derived from the farm.

The last outbreak of Swine-fever in this farm occurred in April, 1886, and since that time till March, 1888, no case had occurred. In this year's epidemic the first case was noticed on March 8. Mr. Humphrey, on *post-mortem* examination, pronounced it a case of Swine-fever, the intestine and lungs showing the typical disease. Till the middle of April 61 pigs had been examined, and found affected with Swine-fever. Of them only 31 had the intestinal disease (ulcers of large intestine), in 30 the intestine was free of disease, but all 61 had the typical disease of the lungs, and most of those examined in this direction had the hæmorrhages in the endocardium of the left ventricle. Now, it is extremely unlikely that that first pig had two different diseases, and it is also very unlikely that 31 pigs, *i.e.*, those in which lungs and intestine were affected, had two diseases, while 30, *i.e.*, those in which the disease of the intestine was absent, and only the lungs were found affected, had the single disease. These observations harmonise well with those recorded in 1877-78, viz., while the lung affection is constantly present, that of the intestine is absent in a number of cases. Neither in 1877-78 nor in this epidemic at Wandsworth, was there a single case with intestinal disease only, without the lungs being involved.

PELVIC ABSCESS, PROBABLY A SEQUELA OF CASTRATION.

BY JOHN HENRY STEEL, F.R.C.V.S., PRINCIPAL, BOMBAY VETERINARY COLLEGE.

THE patient was a bay Persian gelding, about 14.2 in height, reported to be about six years old. He had been purchased for tramway work a few months before, and castrated by cautery. He had done very well after the operation. About the middle of 1887 he was observed to be out of sorts, and to constantly have a temperature above the normal, but no definite disease could be detected about him, nor any marked symptoms of disorder. He was kept under treatment for fever, but did not progress favourably, so I was requested to examine him and take him in hand. The case was exactly as reported, there being no signs of distinct disease of the various internal organs until we came to per-rectal exploration; then a slight globular enlargement (of the remains of the spermatic cord, it was presumed) was detected, and proved painful on pressure. The castration wound on this side had healed up normally, the external ring and inguinal canal seemed all correct, and the case altogether admirably illustrated the value of temperature records as a guide to detection of departure from a general state of health, and per-rectal exploration as a means of exact diagnosis, in some cases also for early detection of such disease as that on hand. The rectal examination had been made in this case as part of the routine investigation of an obscure disorder, and until it was ascertained that a tumour lay against the internal abdominal ring the apparently successful operation performed several months before was not much suspected as a cause of the attack. However, we had now something to work on, and a probable cause of the fever to deal with, not a very accessible one for treatment, and one liable to endanger the life of the patient. Nothing could for the present be done but give warm enemata, keep the bowels lax, and support the strength of the animal. My records are not to hand to show me the various agents and means used and the phases of the attack, but the tumour became larger, and the patient very intolerant of rectal examination; there were abdominal pains, and the animal became very weak. Several times he was *deploratus a medicis*, and full arrangements were made to operate either through the inguinal canal or the rectum, as circumstances might suggest. The fæces managed to pass the swelling satisfactorily, and the patient stuck to his feed, and was one of the most "plucky" ones I have had to deal with while in India. He *would* not give in, and at length swelling began to take place externally, in response to assiduous

fomentation at the groin, and he was afforded some relief. As soon as possible the abscess was opened, and some three or four pints of well-matured pus came away freely. The patient was now extremely emaciated, and the case became complicated by infiltration of pus into the structures of the abdominal wall, so that we had to open successively accumulations at various points, extending even so far forward as between the fore-legs. At last all local troubles ceased, and it only remained to nurse the patient from extreme emaciation to working condition; so he was discharged to the tramway stables (from our hospital, where he had been treated since shortly after I first saw him), and successfully nursed there, and ultimately proved an excellent worker. This case is published as being one of a rather unusual sequela of castration, and as being in support of the inadvisability of surgical interference in cases of Pelvic Abscess. There is an element of doubt on the latter point, however, for possibly the patient would have recovered sooner if operated on earlier. He was over three months in hospital. As far as the result went, we had no reason to regret having simply encouraged nature's efforts to get the abscess to burst externally. There was a minimum amount of Peritonitis, and no evidence of tendency to burst into bladder, rectum, or peritoneal sac.

ON SOME OF THE COMMUNICABLE DISEASES OF MAN AND THE LOWER ANIMALS, WITH REMARKS ON THEIR ORIGIN AND RELATION.*

BY EDGAR CROOKSHANK, M.B., LONDON.

I PROPOSE to bring to your notice some of the diseases communicable from the lower animals to man, and to discuss certain points in connection with their origin and relation; and I shall also deal with those diseases in man which have been *alleged* to arise from diseases of the lower animals. The diseases to which I refer I shall divide, for the purposes of discussion, into three groups. First, I shall draw your attention to some communicable diseases which are transmitted to man, but do not arise in man independently of the lower animals, such as Cow-pox, Foot-and-mouth Disease, Anthrax, and Glanders.

Cow-pox.—Jenner was the first to describe the disease which had been known in the dairy counties from time immemorial as the "Cow-pox," and his publications led to a careful study of the

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* A paper read at the annual meeting of the Midland Branch of the British Medical Association, held at Nottingham, June 14th, 1888.

diseases affecting the teats of cows. I will quote verbatim the description which Jenner wrote in his "Inquiry," as it contains his views as to the origin of Cow-pox, and gives a graphic account of the transmission of the disease to the hands of the milkers.

"There is a disease to which the horse, from his state of domestication, is frequently subject. The farriers have termed it the *Grease*. It is an inflammation and swelling in the heel, accompanied in its commencement with small cracks or fissures, from which issues a limpid fluid, possessing properties of a peculiar kind. This fluid seems capable of generating a disease in the human body (after it has undergone the modification I shall presently speak of) which bears so strong a resemblance to the Small-pox that *I think it highly probable it may be the source of that disease.* In this dairy country a great number of cows are kept, and the office of milking is performed indiscriminately by men and maid-servants. One of the former having been appointed to apply dressings to the heels of a horse affected with the malady I have mentioned, and not paying due attention to cleanliness, incautiously bears his part in milking the cows, with some particles of the infectious matter adhering to his fingers. When this is the case it frequently happens that a disease is communicated to the cows, and from the cows to the dairy-maids, which spreads through the farm until most of the cattle and domestics feel its unpleasant consequences. This disease has obtained the name of the *Cow-pox.* It appears on the nipples of the cows in the form of irregular pustules. . . . Inflamed spots now begin to appear on different parts of the hands of the domestics employed in milking, and sometimes on the wrists, which run on to suppuration, first assuming the appearance of the small vesications produced by a burn. . . . Absorption takes place, and tumours appear in the axilla. . . . These symptoms, varying in their degrees of violence, generally continue from one to three or four weeks, leaving ulcerated sores about the hands, which from the sensibility of the parts are very troublesome, and commonly heal slowly, frequently becoming phagedænic, like those from whence they sprung. During the progress of the disease the lips, nostrils, eyelids, and other parts of the body are sometimes affected with sores, but these evidently arise from their being heedlessly rubbed or scratched with the patient's infected fingers. . . . Thus, the disease makes its progress from the horse, as I conceive, to the nipple of the cow, and from the cow to the human subject."

I need hardly say that as this disease is one of the sources of lymph employed for affording protection against Small-pox, it is of immense interest and importance. It is therefore much to be

regretted that the clinical history of the natural disease in the cow has been, until recently, so much neglected in this country, both by the veterinary profession and our own. It is commonly supposed that both Cow-pox and Horse-pox have been absent from this country during the long period succeeding the outbreaks described by Jenner, Loy, Ceely, and Estlin; but inasmuch as outbreaks bave been comparatively common during this period in other countries, it is far more probable that outbreaks have occurred in England, but have been concealed, overlooked, or wrongly diagnosed. I shall again refer to Jenner's "Inquiry" in speaking of the alleged origin of Small-pox. I shall therefore now pass on to describe another vesicular disease affecting the cow's teat—of especial interest to us, as the virus is conveyed by the milk.

Foot-and-mouth Disease.—This is a highly contagious and infectious febrile disease, characterised by a vesicular eruption affecting the lips, tongue, roof of the mouth, and the feet of sheep, cattle, and pigs. Sometimes the mouth only is affected; in other cases the feet may be the principal seat of the eruption. In milch cows it sometimes happens that the eruption occurs on the udder and teats, and it is this manifestation of the disease which has received so much attention from Rayer. The milk is contaminated by the discharge of the vesicles, and is unfit for use, either as food for the human being or for the lower animals. It induces a vesicular eruption in the mouth, larynx, pharynx, and intestinal canal. It acts most vigorously when administered warm to young animals, and calves occasionally die quite suddenly after sucking cows affected with the eruption on the teats. Fatal effects also result when the milk is administered to young pigs.

It has been stated that no injurious consequences arise from the consumption of the milk by human beings, but there is abundant evidence to the contrary, and the conflicting opinions probably arise, as Brown has pointed out, from the fact that milk is seldom drunk direct from the cow, and rarely in an undiluted form. Hertwig experimented upon himself with milk freshly drawn from a cow with the eruption. He drank a pint, and two days afterwards experienced slight fever, restlessness, and headache. The mouth was dry and hot, and there was tingling in the skin of the hands and fingers. These symptoms continued for seven days after taking the milk. On the ninth day vesicles had formed on the tongue, principally on the edges, and on the mucous membrane of the cheeks and lips (the largest being about the size of a lentil). They were yellowish-white in colour, and contained a whitish turbid liquid, which flowed when the vesicles were pricked with a needle. At the same time a number of vesicles developed

on the hands and fingers; the greater part of them at the time of their first appearance were the size of a millet-seed. They were firm to the touch, yellowish-white, and occasioned a slight tingling. The vesicles of the mouth increased in size and broke, and the epithelium detached itself completely from the affected parts, leaving dark red spots, which disappeared gradually. The slight fever present during the first days ceased after the appearance of the eruption; but counting from this date to the disappearance of the red spots, Hertwig felt a continual burning pain in the mouth, and speaking and deglutition caused considerable uneasiness. On the lips the vesicles dried up, and were covered with thin brownish crusts, which fell off ten days after the appearance of the first vesicles. The vesicles which developed on the hands ran a slower course. From the tenth to the thirteenth day they filled with a liquid, like turbid lymph. They were large and confluent, and finally broke and dried up.

Glanders is a malignant, contagious, and fatal disease, occurring in the horse, ass, and mule, and occasionally communicated to man. The disease spreads very rapidly among horses, and those persons who are in contact with them are liable to be infected. I have nothing to add to the descriptions given by the many writers on the subject, so that I need not make further reference to it, except to remind you that Glanders undergoes no modification when communicated from animal to man, and back again from man to animal, such as is commonly believed to occur in the case of Small-pox and Cow-pox.

Anthrax is a disease affecting cattle, sheep, and horses. To these I must add swine. Toussaint in France is responsible for the doctrine that swine are insusceptible, an opinion also maintained by Klein. During the past year I have made a series of researches, which have established the fact that Anthrax can be communicated to pigs, both young and old.

The disease is also communicable to man. Most frequently it results from inoculation of some lesion or abrasion of the skin. Hence it is by no means uncommon in butchers who have been dressing an animal which has died from Anthrax, or in veterinary surgeons who have been making a *post-mortem*. In such cases the disease is more or less local. In one case brought to my notice, a veterinary surgeon made a *post-mortem* upon the body of a bullock that had died the night previously. The spleen and parts of the viscera were forwarded to me for examination. The blood from the spleen was full of the characteristic bacilli. As I was informed that the veterinary surgeon had inoculated his finger, I wrote for particulars, and ascertained that the bullock had been found dead in a meadow near a river.' After making a *post-mortem*, Mr. A——

wiped the blood off his hands with some rough grass, which cut the skin on the inner side of the third finger. The hand was well washed in the river, and a strong solution of carbolic acid applied. On the following night there was a tingling sensation in the finger, and the next day it became considerably inflamed, and a distinct pustule had formed, with several smaller pustules surrounding the larger one. Mr. A—— became restless, and at times partly delirious, and if he attempted to sleep these feelings were much intensified. He also suffered from great mental depression, which continued during the attack. On the fourth day he lanced the pustules and let out the contents. The finger was much swollen, hard, and extremely painful, and the lymphatics of the arm were inflamed. On the sixth day a medical man was called in and caustic applied. The disease progressed, the pustule increased in size, and on the twelfth day the finger had become black, cold, and much swollen, and the pain greatly intensified. A surgeon was called in and the finger amputated; the pain then subsided, the inflammation of the lymphatics began to disappear, and he gradually recovered.

In another well-known mode of infection the disease is general, as in wool-sorter's disease, and frequently leads to fatal results. In this case the spores of the bacilli are present in the wool or the hair of animals that have died from Anthrax.

I will now pass on to say a few words with regard to my second group. This comprises communicable diseases in man, which in some cases may *possibly* be derived from similar diseases in the lower animals. Such cases are illustrated by Tuberculosis and Actinomycosis.

Tuberculosis is extremely common in cattle and poultry, and also affects pigs, and more rarely horses and other animals. As numbers of cattle slaughtered for the market are tubercular, and as cows with tubercular udders are occasionally found in dairies, it becomes a serious question whether human Tuberculosis may not in some cases arise from the consumption of meat and milk containing the virus of bovine Tuberculosis. Animals, such as pigs, rabbits, and fowls, if fed on tubercular material, rapidly become infected. Is it possible that the flesh of tuberculous animals may infect man? We can only say that direct evidence of the communication by such means to man of bovine Tuberculosis is at present wanting. This may be owing to the fact that as meat is cooked, the virus is destroyed. But if it is possible for this transmission to occur through uncooked material, it would naturally be expected that bovine Tuberculosis would be conveyed by milk, which, as Bang has pointed out, is seldom boiled. The possibility of this source of tuber-

cular infection has been especially brought forward of late by the researches of Bang, and following in his footsteps, by Woodhead and McFadyean. The milk of cows, with Tuberculosis of the udder, contains tubercle bacilli, and such milk given, either by the mouth or subcutaneously, to other animals produces Tuberculosis. Woodhead and McFadyean found, in the course of their examination of a large number of dairies and cow-sheds, in one herd no less than three cows suffering from what they supposed to be Tuberculosis of the udder. In order to obtain some accurate data, they made a systematic examination of some of the cow-houses in Edinburgh. On six occasions they were able to examine 623 cows, kept by thirty-seven dairy-farmers. In fifteen of these dairies they found the whole of the stock healthy. Amongst the others were thirty-seven beasts, in which there were more or less marked changes in the udder, and in six cases they were able to demonstrate the presence of tubercle bacilli.

I have had the opportunity of examining two cases of udder Tuberculosis, and have been able to confirm the observations of these and other investigators with regard to the presence of tubercle bacilli in the milk. This milk, when administered with other food, produced in rabbits tubercular ulceration of the intestines and Tuberculosis of the mesenteric glands. I found that in such cases the bacilli could be more readily demonstrated by collecting the milk in test-tubes, and setting them aside for a few hours. The milk is then carefully poured away, and the sediment at the bottom of the tube spread on a cover-glass, and stained in the ordinary way.

In both these cases the milk had been mixed with the general supply of the dairy. There is thus ample evidence that the milk of tuberculous cows finds its way into the market, but what evidence is there of its producing Tuberculosis in the human subject? If such did occur, primary Tuberculosis of the intestines, might well be expected to be a common affection, but such we know is not the case in the adult. This would, therefore, tend to contra-indicate danger to the adult, but on the other hand, Woodhead has emphasised the probable danger to children. Woodhead has pointed out that from his experience in two large hospitals he has been much struck by the fact that in children who had succumbed to other diseases during the course of tubercular disease of the abdominal glands there was frequently not any trace of tubercular disease in other parts, thus pointing to the intestine as the channel by which the bacillus made its way into the body. Woodhead also remarks that in a large number of cases of general Tuberculosis, where the possibility of

infection by the pulmonary passages was evidently excluded, the tubercular process appeared to have invaded the body by the intestinal canal.

From these observations we may safely conclude that there may be danger in using the meat and milk of tuberculous animals for food, and therefore such meat ought to be rejected from the market, while strict inspection of dairies and boiling of milk before use will be wise, if not absolutely necessary precautions.

The next disease of which I wish to speak may be classed with Tuberculosis, in that it is quite possible that it may be transmitted from the cow to man, but it must be admitted that the evidence in favour of this belief is not nearly so strong as in the case of Tuberculosis.

Actinomycosis.—This is a disease of cattle which has long been reported on the Continent as a common disease, but until somewhat recently in this country it was only regarded as of occasional occurrence, affecting the jaws and tongue, and rarely the nostril and pharynx. My attention has been drawn to this disease for some years, but I will only briefly refer to some facts which I have experienced during the past year. In June, 1887, I had the opportunity of examining a black heifer, three years old, with a large growth in the parotid region. This tumour was discharging in places, and on firm pressure a quantity of yellowish muco-purulent matter was squeezed out, and collected in test-tubes. The case was reported to be one of several affected with the same disease. On spreading some of the discharge in a film on a slide, I observed the little grains which to the naked eye recalled the appearance of Actinomycosis, and on covering with a cover-glass, and examining first with a low and then a high power, the characteristic tufts and club-shaped structures were revealed. The animal was killed, and a section through the growth revealed the characteristic naked-eye appearances of an enormous actinomycoma. But in addition there were several large tumours extending along the trachea, one the size of an orange, and scattered through the lungs were smaller growths, varying in size from a millet-seed to a walnut. Sections of the lung proved that these neoplasms were also the result of Actinomycosis. This case had been sent from Norfolk, and as it was reported that there were several cases on the same farm, I obtained permission to inspect the farm and make inquiries. I found that the animals were suffering with growths in various regions—face, neck, flank, and—scrotum and that these tumours were known by the farmers as wens, stickfasts, and sore-faces. I was informed that the disease was very prevalent in the "fenland," that the

same disease had occurred on some neighbouring farms, and that it was well known to the oldest cowman on the estate. Further inquiries were set on foot, and I have been supplied with a large number of cases from this and other parts of the country, while quite recently I have been investigating two outbreaks of Actinomycosis where the disease has somewhat suddenly appeared in a considerable number of animals. There is no doubt, then, that in this country Actinomycosis is extremely common, and that it is particularly prevalent in certain low-lying districts. If, then, the affection is communicable to man, and bears any relation in frequency to the cases in cattle, numerous cases must have been overlooked by the pathologist, for only a few cases of a disease described as Actinomycosis in man have been published in this country. The existence of such a disease in man is now well established, and Continental observers have placed nearly 100 cases on record. But out of 75 cases collected by Moosbrugger, only ten individuals were farmers, peasants, or farm-labourers, and two only were in direct contact with cattle. And in connection with this, we must bear in mind that the micro-organism associated with the disease in cattle differs in details from the micro-organism in the disease in man. These differences are very marked, but they may possibly be accounted for as the result of the same micro-organism growing under different conditions of soil. On the other hand, in the present state of our knowledge it may be urged with equal force that though similar in some respects, we are in reality dealing with two distinct micro-parasitic affections, which occur quite independently of each other.

Lastly, I will refer to my third group, comprising a number of diseases which have been alleged to have their origin in diseases of the lower animals. The theory of the animal origin of the specific poisons of infectious fevers in man has been brought prominently forward in the alleged origin of Scarlet Fever from a disease of the cow, and this has been discussed with so much gravity that many have been led to suppose that it is an entirely new idea, which may revolutionise our knowledge of the pathology and preventive treatment of these diseases. I shall endeavour to show you that the theory dates back to the earliest history of medicine, and that it has been revived from time to time, only to be refuted and relegated to the domain of exploded ideas. We first hear of it in connection with the origin of small-pox.

Small-pox, we are told, was attributed by the Arabians to a disease of the camel, and this belief was regarded as an argument in favour of its origin from the lower animals when Jenner pro-

mulgated a similar idea. But Jenner, as I have pointed out in the quotation from his work on Cow-pox, substituted the horse for the camel. He considered it probable that Small-pox in man arose from morbid matter of a peculiar kind, generated by horses suffering with "greasy" hocks, and thus reasons: "May not accidental circumstances have again and again arisen, still working new changes upon it, until it has acquired the contagious and malignant form under which we now commonly see it making its devastations among us? and from a consideration of the change which the infectious matter undergoes from producing a disease in the cow, may we not conceive that many contagious diseases now prevalent amongst us may owe their present appearance, not to a simple, but a compound origin? For example, is it difficult to imagine that Measles, Scarlet Fever, ulcerated sore-throats, and spotted skin all spring from the same source, assuming some variety in their forms according to the nature of their new combinations?" Baron informs us that this idea was prevalent in Jenner's mind as early as 1787. It is related that in that year he accompanied his nephew, George Jenner, into a stable to look at a horse with diseased heels, and pointing to them, he remarked, "There is the source of Small-pox. I have much to say on that subject, which I hope in due time to give to the world." And again in 1794, in writing to a friend in connection with this subject, he adds, "Domestication of animals has certainly provided a prolific source of diseases among man. But I must not anticipate; you shall have a paper."

Jenner's views have not found favour. It has been shown by Loy and others that the Grease bears no relation to Cow-pox, and it is now generally believed that Jenner mistook a vesiculo-pustular disease, the same disease in the horse as Cow-pox in the cow, for the disease known as the Grease. This vesiculo-pustular disease of the horse, previously described by veterinarians under various names, is now called Horse-pox. Who is there at the present day who can bring evidence to support the theory of Small-pox in man arising from any disease of the horse? Indeed, the origin of Small-pox from a disease of the horse was not upheld even by Jenner's pupil and nephew, Henry Jenner. The latter promulgated the idea that Small-pox originated from the cow. He believed that Small-pox, in fact, was Cow-pox *intensified in its virulence by being passed through man.* He thus expressed himself: "Nor may it, perhaps, be too hypothetical to suppose that the Cow-pox may possibly be the Small-pox in its original unadulterated state, before it became contaminated by passing through the impure and scrofulous habits of human constitutions." It will be observed that this theory is the reverse of the doctrine

of the present day, which is that Cow-pox is human Small-pox *mitigated by being transferred to the teats of the cow.* However, this theory of the origin of the specific febrile diseases was not allowed to rest; another infectious fever in man was stated to have its origin in a disease of the horse.

Scarlet Fever.—Dr. Copland, in his "Medical Dictionary," states that Scarlet Fever in man was originally a disease of the horse, and that it formerly occurred, and has recently occurred, epidemically as an epizootic amongst horses; secondly, that it was communicated in comparatively modern times from horses to man; thirdly, that it may be, and has been, communicated to the dog. But this opinion has not been accepted, for the disease known as Scarlatina in the horse is described as a non-infectious disease, generally attacking but one or two horses in a large stud. It neither spreads by contagion nor infection; and Williams states that it is impossible to transmit it from the horse to any other animal, and that many cases of the so-called Scarlatina of the horse are in reality identical with Purpura.

And now, comparatively recently, the theory has again been revived, and finally has been adopted by Dr. Buchanan and the Medical Department of the Local Government Board. Owing to failure in finding, in some cases of milk-scarlatina, contamination of the milk from a human source, the belief has grown that in such cases the disease may be derived from the cow; that, in in other words, there is a disease, Scarlet Fever in the cow, which is responsible for outbreaks of Scarlet Fever in man.

In 1882, an epidemic of Scarlatina in St. Giles and St. Pancras was investigated by Mr. Power for the Board. The disease was distributed with a milk supply from a Surrey farm. In this case two facts were ascertained—the one that a cow recently come into milk had been suffering from some ailment from the time of her parturition, of which loss of hair in patches was the most conspicuous manifestation; the other that there existed no discoverable means by which the milk could have received infective quality from the human subject.

In 1885, another outbreak of Scarlet Fever occurred in connection with milk from a farm at Hendon, and again Mr. Power failed to establish infection from any human source in any commonly accepted way—such, for example, as handling of milk, or milk utensils, by persons carrying Scarlatina infection. But on examining the cows with a view to ascertaining any new condition pertaining to them, it came to light during the inquiry that some of them, which had recently been introduced from Derbyshire, were suffering from a vesicular disease of the teats. Dr. Cameron reported on the clinical history of the disease, which was com-

municable to the hands of milkers, while Dr. Klein brought forward pathological evidence to support the theory of bovine Scarlatina. Dr. Klein found a streptococcus in the discharge of the ulcers on the teats, and in some of the cows he found lesions which were alleged to recall the lesions of Scarlet Fever. A similar streptococcus was found in certain cases of Scarlet Fever in man, and the microbes from either source, when inoculated *en masse*, produced similar lesions in calves. It was therefore concluded that the Hendon Cow Disease was Scarlet Fever in the cow, and that Scarlet Fever in man originated from the consumption of the milk of cows suffering from this disease. Now, so far as the pathological evidence goes, I have pointed out, in my papers read before the Pathological Society of London, that these data admit of an entirely different interpretation. The *post-mortem* lesions were those of septic complication, and common therefore to many diseases, and the streptococcus is a septic micro-organism occurring as a secondary result in many affections besides Scarlet Fever. Inasmuch as the streptococcus and the septic discharge from ulcers produced on inoculation in cows certain *post-mortem* appearances, which are common to many diseases, and failed to produce fever, ulceration of the tonsils, or scarlatinal rash, or any condition in the least resembling clinically the disease in man, the conclusion that the result was Scarlatina in the cow was quite unjustifiable ; and if you take the trouble to study the description of the clinical history of the disease by Dr. Cameron, and the *local* result obtained by Dr. Klein after inoculating calves with septic lymph from the cows' teats, resulting in spurious vaccination, you will fully understand the arguments which I have brought forward in support of the opinion held at the Hendon farm that the disease was, in reality, Cow-pox—an opinion strengthened by the complete correspondence with an outbreak of Cow-pox in Wiltshire, the account of which I shall shortly publish in full. That this disease was merely coincident with the contamination of the milk, is borne out by the fact that at the same time the same cow disease was introduced from the same herd into other farms, where it was communicated in the same way to the healthy cows and to the hands of the milkers, and yet the milk supplied from these cows was freely consumed without producing any Scarlet Fever.

Diphtheria has also been supposed to arise from diseases of the lower animals. Dr. Cameron, after giving his account of the Hendon Cow Disease, says : "I am not assuming that this cow malady, under discussion, is capable of causing in the human subject any other disease than Scarlet Fever, but I regard it as

helping to throw some light upon the natural history of Diphtheria. Indeed, there may be an as yet undiscovered disease, perhaps without much skin eruption, and without conspicuous disease of the teats or udder, and probably also of a trivial nature in the cow, with symptoms somewhat different from those of Diphtheria in man, which is capable of causing this disease in human beings through the medium of the milk from such cows. At the same time, it is possible that Diphtheria may be caused by some modification of this particular malady."

Dr. Turner has also suggested the origin of Diphtheria in man from certain diseases simulating Diphtheria in cats, pigs, and horses. I need add nothing to these descriptions, which, indeed, speak for themselves as to their purely hypothetical character, and I fear that they have been brought forward owing to a tendency to pursue fanciful theories which are liable to conceal our ignorance on the subject of the origin of these diseases, and regardless of the damaging result of their application by a public only too apt to listen to the voice of alarmists. I have endeavoured to lay before you the dangers, real and imaginary, with regard to the transmission of some of the diseases of the lower animals to man, and to place both sides of the question before you. I would have you sift the evidence carefully before you formulate conclusions, and above all not be too ready to blame the sister profession if your conclusions are not accepted. On the contrary, when we consider that Small-pox has been asserted to arise (*a*) from a disease of the camel; (*b*) from grease in the heels of the horse; (*c*) from vesicles on the cows' teats; and that Scarlet Fever has been asserted to arise (*a*) from purpura in the horse; (*b*) after parturition in the cow; (*c*) from vesicles on the cows' teats; and that Diphtheria has been supposed to arise (*a*) from garget or mammary abscess; (*b*) from a disease like Cow-pox; (*c*) from a disease in the cow without conspicuous eruption; (*d*) from a disease in the cow without any conspicuous symptoms; (*e*) from diseases of cats, pigs, and horses, simulating Diphtheria, I think that pathologists will rather sympathise with any apathy that may be displayed by the veterinary profession in listening to the opinion of the theorists of our own.

THE BILHARZIA HÆMATOBIA.

BY JOSHUA A. NUNN, F.R.C.V.S., F.R.G.S., ARMY VETERINARY DEPARTMENT.

ALTHOUGH the bilharzia is chiefly of importance to the practitioner of human medicine, still the following remarks may perhaps be of some interest to the veterinary profession, especially as, according

to Cobbold, it was discovered by Sonsino in the ox and sheep, and this fact must be my apology for bringing the following remarks to notice. The parasite has been known for some time past, having been first noticed in Egypt by Bilhary in 1851, and in 1864 in Natal and the Cape of Good Hope by other observers, where it is the cause of a form of endemic Hæmaturia in man; and although only recognised in Egypt and the Cape, it is exceedingly probable that it exists elsewhere on the African continent.

The case from which I had an opportunity of studying the parasite, was an aggravated one in a soldier of the 6th Dragoons, who had been quartered at Pine Town, a station midway between Pietermaritzburg and Durban. The mature parasite is unisexual, *i.e.*, male and female, the ova truncated and fluke-shaped, contained in a shell about $\frac{1}{180}$ to $\frac{1}{160}$ of an inch long by $\frac{1}{325}$ wide, according to Cobbold, page 40. The ova is easily (and the mature parasite sometimes) discovered by taking a small portion of urine, placing it in a test-tube, allowing the blood and solid matter to settle, which they will do in about half an hour, and then decanting off the clear fluid, only about a quarter of an inch being left above the sediment at the bottom. The tube then should be shaken, and a small quantity of the mingled fluid removed by a glass pipette and placed on a slide under a cover-glass. As it evaporates the water can be renewed by a drop placed on the edge of the cover-glass, and in this way I have kept specimens under observation for many hours at a time. I observed when the urine was allowed to stand some time, and the blood to clot, that the fluke-shaped ova were altogether found in the blood, few, if any, in the clear fluid at the top of the tube. If the specimen is examined without the addition of water, it is sometimes difficult to distinguish the ova amongst the blood corpuscles, especially if there is much epithelium present. The ova will take any of the ordinary aniline stains, methyle blue, Spiller's purple, gentian violet, etc., but I found that they shrivelled up when passed through the flame of the spirit-lamp in this process of staining. I found that when a cover-glass film was made and dried in the sun, not in a flame, that the ova could be stained by Ranvier's purocarmine solution, a few drops being placed on to the film on the cover-glass with a pipette, left there for five minutes, then removed with blotting-paper, the cover-glass dried in the sun, and mounted in the ordinary way in Farrant's medium. The surrounding fluid, blood corpuscles, etc., are stained red, the egg-shell a darker red, and the parasite inside the egg-shell a vivid yellow. Left standing in the urine, I found after about the second to the third day the parasites began to move inside the egg-shells, making violent efforts to escape, twisting themselves round and reversing

their position inside the shells. These movements were kept up some considerable time, until the shell of the egg ruptured and allowed the escape of the parasite, which moved across the field of the microscope with great rapidity, apparently swimming with the aid of the cilia with which it is furnished. In most specimens the cilia look at first sight to be nearly round, the edges like the fins of a flat fish, but careful examination will show that they cover the entire body. Some of the parasites do not escape from the shell at once, as it appears to be too thick and to resist their efforts. In this case the body of the parasite appears to undergo a metamorphosis into a number of globules. In several specimens I thought I could detect cilia round these globules, though not invariably so; but perhaps future investigation will prove if this is the case or not. After about the seventh or eighth day the egg-shell bursts, the globules break down into granules, which escape through the rent in the shell. These globules congregate together in masses; placed on a slide in a drop of distilled water, and lightly covered with a thin cover-glass, these globules will be seen to possess a rotary motion, revolving both on their own axis and in a small orbit three or four times their breadth in diameter. This is more particularly noticeable in those globules at the edge of the mass. If the mass is broken up, and the medium in which it is contained set in motion by pressing with a needle-point on the cover-glass, the addition of a drop of water to the edge by a pipette, by tilting the microscope slightly to one side or by slightly shaking the table, they will be seen carried away by the current, but still revolving. Where a scale of epithelium, a congregated mass of blood corpuscles, or any other obstruction breaks the current, some of these globules will be seen under the lee of it in the slack water, still revolving and moving up against the current. These globules, about the second to the fourth day after the egg-shell has burst, begin to elongate into rod-shaped embryos, which can be seen moving through the fluid in a wriggling fashion with great rapidity. One end of these rods is of a brighter colour than the other, and appears to be a head. These embryos do not appear to undergo any further change, and to exist a long time; some I kept in distilled water for twenty-eight days. The larva that escapes from its shell naturally, if I may use the expression, also undergoes segmentation, only outside instead of inside the shell. They can be artificially liberated by pressing on the cover-glass with a needle-point and breaking the egg-shell, which seems to be possessed of considerable powers of resistance, the needle-point having to be pressed with a considerable amount of force before the egg-shell is ruptured. The larva assumes various

shapes, and appears to have the power of contraction when making its exit through the fissure in the egg-shell. If this is too small the larva often appears to become fixed into the rent in the shell, when it makes violent efforts to escape, turning about in a variety of contortions. When free they swim with great rapidity at first, but the motion gets gradually slower till they stop altogether, and this they do much sooner if there are obstructions, such as blood corpuscles forming bands, than if the medium is water. When they stop swimming they still keep up an active movement with their cilia for some time, but this gradually ceases also. In the majority in which I have observed this movement, the stoppage commences from the tail, gradually extending forward to he head. If they are observed in urine in which there are any considerable number of blood corpuscles, this movement is very well seen by their displacement. It is, I believe, a disputed point whether the disease is caused by the drinking-water, or if it is local, the parasite gaining access to the bladder by the urethra when bathing ; but bearing in mind the development of the *Cœnuris cerebralis* of the sheep and the *Filaria oculii* of the horse, which although they gain access to the system by the stomach, only develop in the brain and eye, it is not possible that the bilharzia taken in in the drinking-water only develops when it reaches the bladder. What may be the further development of the parasite to complete the cycle is, as far as I am aware, unknown, but the probabilities are that it finds an intermediate host in the form of some not common water-insect. This is more probable if the enormous reproduction of the parasite is considered ; for unless some natural check were interposed to its increase, almost every human being in South Africa would be suffering from it.

SPASMODIC ASTHMA.

BY HENRY GRAY, M.R.C.V.S., LONDON.

As the existence of Spasmodic Asthma in the horse has often been denied, or has been confounded with "Broken Wind" or Spasm of the Diaphragm, I think the following case is interesting and worthy of record :—

On October 20th, 1888, a brown cart mare, aged eight years, was brought to our infirmary. She was in poor condition, and had been working very hard. It appears that she came home from a journey at 1.30 a.m., and nothing amiss was noticed by the horsekeeper when he left her for the night. At 6 a.m., when he went to his stable, he found her "blowing tremendously." We saw her at 8 a.m., after being brought from a distance of about

half a mile. The nostrils were widely distended at every inspiration, and having a peculiar flapping action, the angles of the mouth being drawn up also at every inspiration and opening during and after the act of coughing. There was a peculiar flapping of the abdominal muscles, the muscles of the floor of the abdomen being drawn up spasmodically towards the loins during every expiration. Respirations 80, and not noisy. The chest walls did not move freely. The cough was paroxysmal, long, loud, and ringing; after coughing there was a quantity of frothy spume expelled *per oram et nares*. There was no grunting; no pain expressed on percussing the chest or on turning or exerting the animal. Bowels, etc., natural. The body and extremities warm and dry. She did not have a painful appearance, and she was very spiteful to other horses when they passed her. Pulse seemed full and rather hard. Partook of water freely. A frothy sound could be heard when the trachea passed into the chest. She has had three similar but slighter attacks, and at various times the respirations were noticed to be affected. Ext. Belladonna ʒss was administered. The owner came to see her at 6 p.m., and so distressing was her appearance to him that he wished to have her destroyed. By our advice he consented to allow her to live until morning, and if no better, then he would have her killed. Æther. Sulph. fl. ʒij was given in oil. At 9 p.m. Æther fl. ʒvj was injected hypodermically into the breast, and she was left for the night, the owner quite expecting to hear of her death in the morning.

Next morning the respirations were natural, and she appeared lively and partook of her usual food. She was sent home, and no further treatment was pursued.

I have seen several cases similar to the above, some of the animals being affected several times. It is frequently seen in old fat cobs and horses of the lymphatic temperament. It is liable to run on to "Broken Wind."

A SINGULAR CASE OF MARE-FOALING.

BY A. W. LAWSON, M.R.C.V.S., FALKIRK.

On the afternoon of the 11th May last I was called upon by Mr. Grindly, farmer, Bonnybridge, near Falkirk, requesting my services upon a grey cart mare labouring under difficult parturition.

On making inquiries as to how long she had been ill, etc., and if at the proper time, he informed me that she commenced to foal at 1 a.m. on the 9th, "nearly three days," and had been trying ever since, but couldn't. Her time of foaling was duly correct.

History of Case.

In from two to three hours from the commencement of foaling, there being no progress, and thinking something wrong, he sent for his veterinary surgeon, who in course of time arrived at the farm. After examining the mare, he assured his client that she would foal all right, just to give her time, and that he would call again in the evening (the mare at this time was labouring severely).

He called same night, and found matters as he had left them, and left them again as he found them, the mare continuing her efforts to relieve herself, but to no purpose.

Thursday morning he found one foot protruding *per vulva;* still maintained that she would foal all right, "of her own accord." Would call again in the evening. In the interim she was ordered exercise, yoked in a cart, but this very wisely was not done. At night he found her no further advanced. Friday morning the same, but naturally to suppose, much exhausted.

Doubtless it will sound rather funny in the ears of your numerous readers, when I state that during the two and a half days of that gentleman's attendance he never once examined the mare *per vagina*, in order to ascertain what was the cause of retention; but perhaps *humanum est errare*. We all do so at times, yet under similar circumstances I hardly think so obviously.

It is not very pleasant to be called in apparently *in articulo mortis*, especially so when one considers the case neglected; so it was with a feeling of reluctance that I went, being sanguine of a fatal termination.

Having arrived at the farm, I found the mare in a most prostrate and exhausted condition, swaying from side to side, with legs astride, body covered with cold perspiration, extremities and ears cold, pulse almost imperceptible, "impossible to take it," nostrils distended, listless expression of countenance, one foot of the fœtus protruding *per vulva*.

I next proceeded to explore matters *in utero*, which examination revealed the following abnormal presentation: head directed downwards and backwards underneath the chest, the other leg turned backwards along the abdomen. Manipulation was a hard task, from the fact of the fœtus being very much enlarged through emphysematous swelling. Having got matters rectified and in position, with plenty assistance to pull, progress was visible, when all of a sudden one half of the body came away, the trunk giving way, leaving the other half in the mare. I as soon as possible secured the hind legs of the remaining half, and got it away also. Thus all was away. My next duty was to attend to the wants of the mare, which seemed a hopeless case, being more dead than alive.

A consideration in our patients is the exhibition of agent's "expense" where hope of success is almost beyond anticipation. However, under the circumstances, I was determined to leave no stone unturned.

I administered a strong diffusible stimulant, with a febrifuge and antiseptic, syringed the uterus thoroughly out with warm antiseptic solutions, removing all morbid products, fluids, etc., then dressed the whole of its lining membrane with antiseptic liniment. Had her well rubbed, dry and warm rugs applied, bandages to legs. Ordered the medicine "as above" to be given every three hours, likewise the injections *in utero*, until further instructed, with light warm mashes and gruel drinks, etc., occasionally, not neglecting external comfort. For four days her condition was critical, after which slight improvement was obvious. Prescribed stimulating tonics, with still the antiseptics and the injections. As convalescence became more manifest I combined the above with mineral tonics.

She made an excellent recovery, when in about two to three weeks I sent her to grass.

Remarks.

There was nothing unusual in the form of presentation, and had assistance been rendered at the proper time a living foal might have been born. In fact, had the malpresentation been reduced she could have foaled herself. Her labour was strong, but it gradually became inert from exhaustion. The uniqueness of the case consists in the mare holding out so long, nearly three days, straining and labouring while her strength permitted, and eventually pulling through. The fœtus, when taken away, was literally rotten.

Editorial.

THE TRIUMPH OF PASTEURISM.

The opening of the Pasteur Institute in Paris, forms a marked event in the history of micro-biology, and a real triumph for Pasteur. It might almost be considered the crowning victory of his life, did we not know that he is still labouring, notwithstanding serious infirmities, in the cause of science, and particularly in that branch of it to which, in recent years, he has entirely devoted himself. His victory now consists in having founded a special institution for the study of those maladies of organised beings, which are due more or less to microbes; this establishment being liberally endowed, and provided with competent investigators, and every appliance necessary for the great and important work yet to be achieved in this direction. The ceremony attending the opening of the Institute, and the notabilities present, was in every way worthy of the occasion, and we need not wonder at the emotion Pasteur displayed, or the feelings of pride and gratitude which moved him, when we reflect what he has been able to accomplish for the benefit of mankind, and the grand sum total of this laid briefly before him and the assemblage by the various speakers. The almost insuperable obstacles he has overcome—not the least being those raised by jealous rivals, incredulous amateurs, or persons hostile to science—and the manner in which he has overcome them, form a most enthralling chapter in the history of science.

Every year adds to the splendid edifice of micro-biology which Pasteur has founded, and to which he and others are continually adding; and we cannot doubt that, having now completed all arrangements for a more vigorous and complete course of research, great benefits will be incessantly conferred upon mankind by the work done in his new laboratories. France now stands far ahead of every other country in the encouragement she gives to science, and though investigators of the Pasteur type cannot be created by State intervention—for, like the poets, they are born, not made—yet the State can aid and encourage them in their mission, which, but for this countenance, might be only imperfectly fulfilled. All men who love science and admire scientific work, especially that which tends to benefit mankind and animals, will award their congratulations to one of its most illustrious representatives, M. Pasteur, on the signal progress he has made in developing the particular branch of human knowledge with which his fame will be always intimately associated, and will earnestly hope that his life may be long spared to preside over the institution which bears his honoured name.

ON THE USE OF THE TAPETUM LUCIDUM.

BY HENRY LEE, F.R.C.S., CONSULTING SURGEON TO ST. GEORGE'S HOSPITAL, LONDON.

At the inquest held on the body of the woman lately murdered in Berner-street, Whitechapel, it was given in evidence that the horse of the man who discovered the body refused to pass it. The man dismounted, and only after feeling about with the handle of his whip made it out. The horse could see

it when the man could not. This is only one of a very great number of instances which might be given to prove that the horse, and other animals which have the tapetum lucidum, can see where a man cannot.

The ordinary diagrams illustrating the action of light upon the retina in the shape of a small inverted arrow might lead to the impression that light entered the eye so as to fall upon the retina only from the immediate neighbourhood of the object looked at. This is not so; for although one part of the retina is used habitually for accurate vision, yet some vision takes place in other parts.

Standing in the middle of a moderate-sized room and looking at the centre of one of the walls, the observer will see that part distinctly, but he will also see less distinctly nearly all the other parts of the wall. A sportsman going into a field and having his eyes fixed upon an opposite stile will see anything moving in any part of the field. The less sensitive parts of the retina act as the finder does in a large telescope. It affords information as to the point to which the visual axis is to be directed. In the "Phil. Trans.," vol. xci., p. 46, Dr. Young observes: "The visual axis being fixed in any direction, I can at the same time see a luminous object placed laterally at a considerable distance from it, but in various directions the angle is very different. Upwards it extends to 50°, inwards to 60°, downwards to 70°, and outwards to 90°. Thus the rays of light which enter the human eye come from a very considerable area, but when they have once passed through the retina they are absorbed by the black pigment of the choroid. Many animals, notably the horse, the ox, and the sheep, have very much larger pupils than man, and consequently the amount of light from any fixed point which enters the eye is greater, and the area from which the light is derived is also greater: in them all the light which falls upon the tapetum is reflected as from a slightly concave mirror, and brought to a focus in front of the eye. If the eye were perfectly circular, any light reflected from its posterior part would come to a focus in the middle of the eye, but the back of the eyeball is only slightly concave in front. This concavity varies with the shape of the eyeball, and consequently any change in the focal length of the eye will alter the distance at which the reflected and converging rays meet. Therefore, inasmuch as the muscles of the eyeball have the power of altering its focal length, in the same degree have they the power of determining the distance at which the rays reflected from the tapetum will come to a focus in front of the eye."*

If the eye of a sheep or an ox be frozen so that its shape cannot be altered, and the optic nerve be cut close off, it will lay almost flat upon its back. There will be about the same amount of convexity of its external surface as there is in a frontal laryngoscope. The difference in shape of the anterior and posterior parts of the eye is in this respect very remarkable. The comparatively flat surface of the posterior part is exactly adapted to the reflection of light from the tapetum which accurately lines it.

Converging rays of light reflected from the tapetum come to a kind of focus in front of the eye at different distances in different animals and in the same animal at different times in accordance with the alteration of the antero-posterior diameter of the eye. But although there is one point in the visual axis where the rays of light are particularly concentrated, yet the visual axis may be more or less illuminated for an indefinite distance. The rays of light, after meeting at the focal distance in front of the eye, again diverge, and throw some light beyond the object immediately looked at.

The use of the tapetum differs in different animals. In the sheep and the ox it is used for grazing purposes principally. In the antelope and horse it

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* "On the Tapetum." Churchill.

enables them to see in the dim twilight where they are about to tread. In the cat and dog the reflected light is thrown farther forwards, and enables them to judge accurately of the distance of their prey, and in the giraffe it is used for browsing. It is a curious fact that all the specimens of the tapetum in the museum of the College of Surgeons with one exception are put upside down. When this was done the use of the tapetum could not have been known.

Artificial light, unless properly used, may interfere with the use of the natural reflectors of the eye—the glare of the greater light may obscure the lesser.

In the published accounts of an accident to Her Majesty in Scotland it is stated that Mr. John Brown sat on the box of the carriage and threw the light from the lantern directly between the horses' heads. The light under these circumstances would be thrown some yards in front of the horses, and their bodies would prevent any light being thrown in front of their feet. It is here that their natural reflectors would throw it. The glare of a greater light in front would prevent their seeing what was immediately before them, as they otherwise would. As far as the horses are concerned, if an artificial light be used, it ought to fall in front of the horses' feet or between the near horse and the pavement in town and the ditch in the country.

Another use may be assigned to the tapetum. It may not only enable animals feeding to see any foreign matter that might be accidentally mixed with their food, but the glare from the tapetum might also be seen by any living creatures that might be in danger of being taken up with it. A snake, a frog, or a mouse seeing this reflected light would be warned and have time to escape.—*Medical Press.*

ON THE TRANSMISSIBILITY OF COLOUR IN HORSES.*

BY DR. WILCKENS, VIENNA.

1. *English Thoroughbreds.*—Parents of *similar colour* transmit to their offspring their own particular colour in the following degree. In 1,000 matings, 856 times. In *colour-crossing* 1,000 matings produce 437 foals the colour of the stallion, and 508 that of the mare, with 55 of various colours. In animals where colour has been *bred pure for generations* chestnut is transmitted to the offspring to the greatest extent, in 1,000 matings 976 times. In *colour-crossing*, brown, in 1,000 matings where the stallion has been brown, the colour has been reproduced 529 times; in 1,000 matings where the mare has been brown, 615 times. Black is reproduced to the least extent in colour-crossing; in 1,000 matings, black stallions, 116 times; 1,000 matings, black mares, 92 times.

2. *English half-breds* transmit, in 1,000 matings of *like-coloured parents*, 873 times their own colour. By *colour-crossing*, 1,000 matings transmit to 367 foals the colour of the stallion, and to 555 the colour of the mare, and to 78 various colours. In animals *bred pure to colour* for generations, chestnut is here again reproduced in highest degree, in 1,000 matings 946 times. In *colour-crossing*, brown stands highest; in 1,000 matings, brown stallions, 554 times; in 1,000 matings, brown mares, 708 times. Black, again, is the most rarely reproduced in colour-crossing—in 1,000 matings, black stallions, only 132 times; in 1,000 matings, black mares, 210 times.

3. *Arabs, pure and half-breds*, transmit in 1,000 matings of *like-coloured parents* 837 times their own colour. By *colour-crossing*, in 1,000 matings, 313 foals the colour of the stallion, 566 the colour of the mare, and 121 of

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* Translated from the *Austrian Agricultural Year Book* by E. E. Bennett, F.R.C.V.S., M.R.A.S.E.

various colours. In animals *bred pure to colour* for generations, grey is reproduced in greatest degree, in 1,000 matings 900 times. By *colour-crossing* grey also heads the list; in 1,000 matings, grey mares, 729 times; then brown, in 1,000 matings, brown mares, 551 times. The most rare, again, is black; in 1,000 matings, black stallions, 125 times; in 1,000 matings, black mares, 190 times.

4. The occurrence of other colours than that of the parents is, as a rule, due to "casting back" to one of the ancestors. Chestnut is the colour which is most responsible for this.

5. Colour is transmitted without any regard to the gender of the offspring. Brown occurs, however, in greatest degree amongst mares, especially in colour-crossing; for every 1,000 brown horses there are 1,091 brown mares. Where *pure-colour* breeding has been persevered with, grey is transmitted in greatest degree to the female offspring, in *colour-crossing* to the male; in the latter, for every 1,000 grey horses there are 948 grey mares. For other colours in colour-crossing, for every 1,000 chestnut horses there are 1,013 chestnut mares; for every 1,000 black horses there are 1,036 black mares. It is probable that the higher reproduction of brown as a colour in the offspring is due to the greater hereditary power (transmissible) of the mare, through which also the female gender is more favoured as to numbers.

HORSES REQUIRED FOR THE INDIAN ARMY.

By J. H. B. Hallen, M.R.C.S., M.R.C.V.S., General Superintendent, Horse-Breeding Department.

(*Continued from page* 348).

32. It will be interesting for us to refer to the stallions that have been employed in Government horse breeding in India for the last ninety-four years and to trace the practical results of the using of each class of sire. Many of my hearers who are in the Artillery and Cavalry branches of the Army, or more especially the officers of the late Stud Department, or present Army Remount Department, will be able to follow me in my description of the country-bred stock of each class of sire, as of recent years found, and now present in the regiments and batteries of the Indian Armies.

33. The imported and other breeds of sires employed since the inaugurating of Government Stud Establishment in 1794 have been:—

English Thoroughbred.
Arab.
Australian.
Cape.
Stud (Home Indian Stud-bred).
English Half-bred (Roadster "Shaw" and Norfolk Trotter).

34. Allow me to give a short description of the produce of each class noted, out of country-bred mares.

35. By thoroughbred English the stock is as a rule handsome in top and outlines of back, hind quarters, and carriage of head and tail, but is often shallow in girth and back rib, light in barrel, and from 70 to 80 per cent. are leggy and deficient in bone of limb. Diseases of legs are more common among thoroughbred stock, *e.g.*, Curb, Bone Spavin, Bog Spavin, and Ring Bone are not infrequently shown. Few of this stock prove fit for British Cavalry, and hardly one for Horse or Field Artillery; but some are purchased for Native Cavalry. Many native breeders are distrustful of this class of sire, as they find their stock do not realise a good price in the market.

36. By Arab stallions the produce is smaller in height than that by the

thoroughbred English, but is very pretty, having an even outline of back, loins, and hind quarters, with good barrel and handsome carriage of head and tail; but the legs are often light under the knee, though of better, harder, and more lasting material, and freer of disease than the stock of the thoroughbred. The small size of the produce by Arabs is the objection raised by breeders, dealers, and Army remount agents, and as this stock realise lower prices than larger stock, so the Arab sire is more or less at a discount. Had the breeders large and broad 15-2 mares, and were these mated with true Arab horses, doubtless higher produce would be obtained, and then the Arab sire would become a favourite, for his hardness of constitution and steel like limbs, with beauty of conformation are points generally acknowledged by all Asiatic horsemen.

37. By Australian sires, which as a rule have been thoroughbreds, indeed thoroughbred English, bred and reared in Australia, the young stock prove often better-boned in limb than the stock of imported thoroughbreds from England; but in other points are similar to the stock of the English thoroughbreds.

38. It was suggested in 1885 that stallions, thoroughbred, but showing more substance of limb, and of better constitution might be obtained from Australia, and I accordingly addressed twelve of the leading breeders of that country by a circular letter, in October of that year, on the subject, but received only one reply, and that from one of the most successful breeders as follows:—

"I shall have much pleasure in doing what I can for you in informing breeders of your requirements. I must, however, say at the outset that there are very few breeders who breed the description of horse you require, and who would care to export them for the money. We are in quest of the same kind of horse ourselves. The stallions mostly used are those which have been on the turf. The good ones fit to breed from are worth £500 to £1,000, and those which might be got at your figure [£250] would not be the sort you require, or, indeed, would it be judicious to breed from them being mostly on the leg, and without substance. This is not saying much for our horses—but the fact is, breeding is such a hazard, the good ones are exceptions, and most breeders only breed for the turf."

39. By Cape horses some stock has been obtained, but only a few Cape sires have been in the Indian studs. They have produced good wiry-limbed stock, rather light in general build and limb, and not of sufficient size and power for general army requirements. At the present time no sires of this class are in the Horse Breeding Department.

40. By stud-bred sires, *i.e.*, horses bred in India and reared by the late Stud Department, some good stock have been obtained, more especially from those with half-bred English blood in their veins, but those possessing chiefly thoroughbred and Arab blood have as a rule produced stock light in bone and limb.

41. By half-bred English horses. Under this head are included the several classes named Roadsters, Hackney and Norfolk Trotters, also some horses imported from England years ago, I believe of Yorkshire breed, and were known in the late Stud Department as "Shaws," having been provided by a breeder or dealer of the name of Shaw. These several half-breds have been said to be pure half-bred horses, not mongrels, as an immediate cross of the thoroughbred horse and cart mare, but the produce of a systematic course of breeding originating in the cross of these two breeds. The Yorkshire, Cleveland, Suffolk, Lincolnshire and Norfolk horses are representatives of the results of this original cross, and these breeds are now acknowledged as separate and distinct, possessing pedigrees by which they prove that they are each of a distinct class and are thus pure half-breds.

42. The horses of these breeds that have lately been imported to India for stud purposes have been chiefly Roadsters and Norfolk Trotters; and these have, with country-bred mares produced stock of good bone and power, proving suitable and sufficiently well bred for Army work in India.

43. I may mention that as a rule most of the best-boned stock in the late Stud Department when inspected by the Special Stud Commission during the years 1872-76 had half-bred English blood in them; more especially did some, not all, of the Shaw horses' progeny show more bone and general substance. The Special Stud Commissioners bore this fact in mind and advised the employing of more half-bred sires; these to be of pure breeds and showing quality. Some of the half-bred sires that had been imported from England were, in the opinion of the Commissioners, of not sufficient quality; but they found their produce proving excellent for artillery purposes. A recommendation of the Commissioners that a certain number of half-bred stallions, as well as thoroughbreds, should be obtained and purchased by an officer having had experience in horse matters in India, was supported by the Government of India, and sanctioned by the Right Honourable the Secretary of State for India in Council, and Lieutenant-General A. R. Thornhill, who had been many years in India, and was well known for his sound judgment of horse-flesh, as Joint Remount Agent in Bombay, for the Governments of Madras and Bombay, was appointed purchaser of stallions for the Indian Government. This officer since 1876 has bought all the English-bred stallions sent to India, and I take this opportunity of recording my expressions of gratitude to him for having provided the Horse Breeding Department with the very good stallions we have received.

44. I, of course, do not wish to imply that every stallion has proved a success, but I do most distinctly affirm that at least 90 per cent. of the half-bred sires have fully realised the expectations formed of them. These horses were for several years considered by horsemen in India, accustomed only to thoroughbred, Arab, and country-bred stock, too coarse and unfit for the purpose of improving the breed of the horses in India. Some persons have declared them to be cart-horses; but such an opinion could only emanate from minds biased against the breed, or ignorant from a lengthened and probably continuous residence in India, of horse-breeding as now obtaining in Great Britain and Ireland, and the Continent of Europe. Again, these horses have been called Belgian, Flemish, etc.; but as they have been mostly bred and reared in Norfolk, where their sires and dams of pure Norfolk blood can be seen, and as from the produce of these, the Norfolk Trotters sent to India have been selected by General Thornhill, we can but accept them as Norfolk horses.

45. Gentlemen, we are aware that most Englishmen, from their love of horses, consider they have, and doubtless do possess a right to hold and deliver opinions regarding horse-flesh; and on this fact rests, no doubt, the diversity of opinion obtaining on the subject, as each lover of a horse has his or her particular class or type of horse to love. It is amusing to hear opinions passed by judges of horses when they are inspecting the Government stallions.

46. The cavalry officer, when looking at a handsome thoroughbred, declares that breed to be the right one for Indian Stud work. The artillery officer exclaims when looking at an active well-boned Trotter, "Ah! this is the horse in my opinion suited for producing good Army horses for India." A lady who has been admiring a very pretty Arab horse, ejaculates, "What a dear! truly lovely."

47. But the Government of India are desirous of obtaining a sufficient number of really good army horses bred and reared in India, and capable of doing good work by having blood, bone, and power to enable them to carry and

draw the heavy weights of British cavalry and artillery, in all vicissitudes of climate. The practical results of horse breeding that have obtained and are obtaining in India indicate that such horses cannot be produced from the present country-bred mares by mating them with thoroughbred or Arab stock, that very few per cent. of remounts so bred prove fit for those branches of the service: but we are having day by day more proof that the produce of these mares by half-bred English horses (or as they are now called in England, Hackneys) of pure breed, is well adapted for general army work in India, thus indicating that the more this class of sire, *the well-bred half-bred*, is employed, a greater chance will be afforded of securing larger framed country-bred brood stock, which will yield still larger-framed and boned produce, and the mares of this improved and developed stock may in time become large enough in bulk to allow of their being mated to Arab sires; should it be deemed desirable to add more quality and compactness in bone, with powers of endurance, which are the well-known characteristics of the true Arab.

48. I do not mean the Persian Gulf Arab, the cross between the Arab and Persian which has been during the last thirty-five years bred to meet the wishes of Indian cavalry officers, who gain in this cross the addition of one or two inches in height at the expense of a certain amount of steel-like bone, tough ligaments, and tendons.

49. It therefore becomes evident that the above lines, based upon practical results, are sound, and should be adopted in horse breeding in India. It is apparent, likewise, from results both in the late Stud Department, and in the present Horse Breeding Department, that the thoroughbred English and Arab horses are not the sires to mate with country-bred mares, as most of the produce prove generally leggy, light in barrel, and too light in limb for general army purposes.

50. Doubtless the stock is pretty, and shows great quality, and as a rule has speed, but the latter only when carrying light weights over short distances. But this is not the type of horse wanted for the Indian army.

51. My experience with regard to the employing of thoroughbred and Arab stallions in India commenced twenty-six years ago, when superintendent of the Stud Department in the Bombay Presidency, and then I believed it right to use these breeds of sires for the mares of the country. I have now to confess that on visiting, three years ago, one of the best breeding districts in the Bombay Presidency, and attending an annual horse show held there, I found the stock resulting from the use of these sires, though very handsome in top, and pretty in carriage of head and tail, lamentably deficient in bone and sinew of limb, leggy, and wanting in girth. The director of the Army Remount Department was present at the show with the hope of finding remounts, but he did not succeed in seeing one fit for the British services: I believe that not one country-bred remount for the British services has been secured as yet in the Bombay Presidency. May I therefore ask you to remember that thoroughbred and Arab stallions have brought about this result.

52. Bear with me while I remind you that the English thoroughbred of to-day is generally acknowledged to be, when compared to the thoroughbred of a century ago, an animal deteriorated in constitution and in limb, and as a rule only fit for the purposes for which he has of late years been mostly used—viz., to carry light weights at a tremendous speed over short distances, often measured only in furlongs. Again, the pampered life in which the thoroughbred has been bred and reared for a century or more, does not add to his fitness to become a sire of animals to be used for hard work over long distances and on scant commons.

53. The Arab by his breeding, life, and history, is by far better qualified to impart blood, toughness of sinew, compactness of bone, hardiness of

constitution, with powers of endurance even on the shortest of forage than any other sire. His size is his only weak point, as an army horse; but when a really hard campaign ever comes off, and but little grain or forage is to be had, the cavalry mounted on horses possessing Arab and country-bred blood will be found the most enduring war horses, and more suited than any other breeds for tough work.

54. Still, as the demand for army horses of greater size, bulk, power, and weight is made on account of there being heavier men to carry and guns to pull, the lines I have indicated for producing a larger type of horse will, I believe, be found sound and successful.

55. We should, I believe, rely on the pure half-bred of England as a sire, to give more bone and substance to our stock.

56. But if better stallions possessing these qualifications and sufficiently well bred, and of a pure breed can be obtained in any other country, most certainly should they be secured for India.

57. Again referring to thoroughbreds, let me mention that they are not used *per se* in England to produce anything but race horses, or for light weight carrying purposes. But the thoroughbred in England is now being employed by mating him with half-bred or even light cart mares to produce useful horses. I would invite your attention to two pamphlets written by Mr. Walter Gilbey, the one "Riding and driving horses, their Breeding and Rearing, March, 1885;" the other, "Suggestions upon Horse Breeding, 1886." Both published by Vinton and Co., No. 9, New Bridge-street, Ludgate Circus, London, E.C.

58. Mr. Gilbey ranks as one of the most successful breeders in England, and I believe a perusal of his most interesting papers will convince you that he writes on a subject that he is practically acquainted with.

59. Let me also suggest to all interested in horse breeding in India to read the following books on the subject:—

Moorcroft's "Observations on the Breeding of Horses within the Provinces under the Bengal Establishment, by William Moorcroft, Superintendent of the Honourable Company's Stud," written about the year 1815.

"Report of the Stud Committee, Bengal, 1869," of which Major-General Colin Troup, C.B., was the President.

"Final Report of the Special Stud Commission, Bengal," 1876.

"Government Horse Breeding in India, Past, Present, and Future,"—a paper I read at a meeting of this Institution on the 6th May, 1887.

The above books will be found in the library of this Institution.

60. In conclusion, let me assure His Excellency, Sir Frederick Roberts, who has so very kindly occupied the chair on the present occasion, and you all, gentlemen, that no man loves the high-bred horse more than I do. No man values blood, enduring powers, more than I do. Many dear friends and companions in the hunting field I have had, and still have in India, know well that I am generally to be seen when hog-hunting on an Arab, or half-bred Arab country bred, as from their blood, powers of endurance and steel-like quality of limbs, I know they are, though small in stature, well able to carry me safely, and will last under my heavy riding weight of fourteen to fifteen stone during a long day, under a tropical sun.

61. One word more; pray do not go away with the idea that I mean there are no good thoroughbreds. I speak of the thoroughbred as now-a-days generally obtainable; not of the few exceptionally grand horses whose names may be found in the Stud Book.

62. In order to obtain stouter and better boned thoroughbred horses, racing weights and distances must be increased to those in vogue a hundred years ago.

THE PASTEUR INSTITUTE.

THE new Pasteur Institute at Paris was opened on Wednesday, November 14th, by the President of the Republic, who was accompanied by M. Floquet, M. Goblet, M. Lockroy, M. Jules Ferry, the Presidents of the two Chambers, the Turkish Ambassador, and several other political notabilities. A large number of Members of the Institute, including the Duc de Broglie, M. Léon Say, M. Jules Simon, M. Duruy, M. Berthelot, and Baron Alphonse de Rothschild. The large library in which the ceremony took place was filled to overflowing. The President of the Republic took his seat shortly after one o'clock, having M. Pasteur on his right. The proceedings opened with a brief speech by M. Bertrand, the Secretary of the Academy of Sciences, who eulogised M. Pasteur and his manifold researches in the domain of science. Dr. Grancher followed with an interesting statement, in which he spoke rather strongly of the systematic opponents of the Pasteurian method, who, instead of meeting him in fair argument, denounced him as a charlatan. He contrasted this with the action taken by the Committee of investigation appointed by the English Government, and he quoted with pride the report of this Committee, which, including eminent men of science, like Sir Henry Roscoe and Sir James Paget, had, after long and patient investigation and experiments, come to the conclusion that M. Pasteur had discovered a preventive against hydrophobia comparable to vaccination against Small-pox. Dr. Grancher went on to state that since the middle of 1885, when the first two human beings were inoculated, 5,384 persons had passed through the laboratories in the Rue d'Ulm and the Rue Vauquelin, and that the rate of mortality, which had been 1·34 per cent. in the first year, had been reduced to 0·77 per cent. in the first six months of this year. This rate of mortality, be it observed, comprises the deaths of persons who had the poison already established in their system when they come to be inoculated, so that to get at a really precise estimate of what the effect of the inoculations has been they ought to be omitted from the calculations. If this were done the rate of mortality would be still lower. But the figures, even as they stand, are very striking, for the estimated mortality previous to the discovery of the inoculation method was about 16 per cent. of the persons bitten. Dr. Grancher stated that twenty laboratories altogether have been established for preventive inoculation, seven in Russia, five in Italy, and one each in Roumania, Austria, Brazil, Cuba, and the Argentine Republic; one will shortly be opened at Chicago, and one in Malta, the last named being the only one on British soil. Statistics from all these places were read, by which it was sought to show the great reduction of mortality, the proportion of fatal cases being higher in Russia than elsewhere, as most of the victims had been bitten by wolves, the virus of which is so much more deadly than that of the dog. M. Christophle, the treasurer of the fund, reported that the subscriptions, which included handsome sums given by the Czar, the Emperor of Brazil, and the Sultan, amounted to over £100,000, of which just three-fifths had been spent in building and equipping the Institute, leaving only £40,000 as capital for an endowment fund. The grants made by the Government have hitherto been about £5,000 a year; but the desire of M. Pasteur and of his Committee was to obtain further private subscriptions, which will render the Institute independent of the State. M. Pasteur experienced so much emotion, that he did not feel equal to delivering the speech he had prepared, and this was read by his son, who is an *attaché* to the French Embassy at Rome. It consisted of a brief review of his past work, and of the various researches he intended to prosecute in the new building. The President of the Republic, without making a speech, decorated with the Officer's Legion of Honour Dr. Grancher and M. Duclaux, and conferred minor distinctions upon two other of M. Pasteur's assistants. Upon the conclusion of the ceremony, M. Pasteur conducted the President of the Republic and his other distinguished visitors over the new building.

THE NEW FIRE-ARMS IN RELATION TO VETERINARY SURGERY.

THE immense improvements which have been recently made in fire-arms deserve serious consideration not only from army surgeons, but also from the officers of the Army Veterinary Department, and those who take an interest in military surgery generally. Of the fire-arms in use, perhaps the most striking improvements have been introduced into the rifle, which has now become a terribly destructive weapon at an almost incredible range. Especially is this the case with the small-bore or Rubini rifle now adopted for the British army, which will probably kill either man or horse at a distance considerably more than two miles. The rapidity of fire is also another feature in the mechanism of the rifle, that renders it still more formidable, and especially when employed against mounted troops. The new service magazine rifle sends a bullet with immense velocity, and has therefore a flat trajectory to a great distance, its accuracy, range, and penetration exceeding that of any rifle heretofore produced. This is proved by a trial which recently took place at the Cæsar's camp ranges, Aldershot. In this the target represented a battalion of seven companies at war strength, standin quarter column. The front company were represented by iron and wood screens, the remaining companies by wooden screens of thickness varying from a quarter to three-quarters of an inch. The average percentages of hits obtained in different experiments at a range of 2,800 yards were respectively 43, 26, and 15. A heavy mist obscured the target at all the ranges. The bullets penetrated the wood and were flattened against the iron screens at 2,800 yards.

We have said that the rifle is a small-bore, and the bullet is therefore very small. Indeed, cartridge and bullet (they are, of course, in one piece) are not much thicker than an ordinary pencil, and measure only three inches, the cartridge being two inches, and the bullet one inch by a quarter inch. The small-bore rifle has had its opponents, who asserted that such a tiny bullet *might* stop the advance of a man, but could not be trusted to do so in the case of a large animal like the horse ; therefore it would prove useless in checking a cavalry charge. Even the bullet of the new Martini-Enfield rifle, and which was smaller than that of the Henry-Martini, but nearly as heavy again as that of the Magazine rifle, was suspected to be too small to drop a horse. The question was one of the utmost importance to decide, and it was considered that nothing but an experiment on the bodies of horses could settle it, unless we waited until it could be tried in actual warfare ; but then the result might be hazardous in the extreme.

It was therefore resolved that a trial should take place of the Martini-Enfield and the rifle we have noticed, in order to ascertain which was most likely to check a horse in a cavalry charge, the bullet of the former being nearly as heavy again, 384 grains, as that of the latter weapon, 216 grains. The trial took place at the Small Arms Factory, Enfield, a short time ago, and the arrangements were chiefly entrusted to the Veterinary Department. The Principal Veterinary Surgeon was present, and the details were carried out by Inspecting Veterinary Surgeons Evans, Lambert, and Walters, and Veterinary Surgeons Duck, F. Smith, and F. Raymond.

For an account of the trial, the following is obtained from the report furnished by the Principal Veterinary Surgeon to the Small Arms Committee. He says :—

As I was present, assisting at the experiments, and supervising the examination of the bodies of the horses in order to ascertain the effects of the bullets, I may be allowed to make a few observations introductory to the general detailed report.

Six cast horses belonging to the Royal Artillery at Woolwich, had been sent to Enfield for the experiments; but only four were utilised, as sufficient evidence with regard to the effects of the bullets had been obtained in these. They belonged to the class of "leaders" in a gun-team, and therefore might be taken to represent either cavalry or artillery horses. They were in good condition, and free from any disease or blemish which might have influenced the result of the experiments. They were killed instantaneously by shooting them in the brain, and then slung in such a manner as to present, as nearly as possible, the normal standing attitude of the living animal.

In order to prevent the embarrassment and uncertainty which must inevitably have been produced, had many shots been fired into the carcasses before the points selected for testing had been hit, an iron plate or shield, with a small round opening in the middle, was employed to protect the body, against which it was slung; the opening in the centre corresponding to the part into which the bullet was to penetrate. By means of this plate, which, being whitewashed, played the part of a target, the central opening, four inches in diameter, being the bull's-eye, the eighteen shots described were well placed for the purpose of comparison of effects.

Three extra shots with the Rubini rifle are added, as, being in the nature of misses, they are not favourable for comparison.

Two bodies were in position at one time, one being allotted to each rifle, and were shot at alternately; the first two were fired at from 200 yards, but it was so difficult to send the bullet through the target-opening at that distance that the range was changed to 100 yards. The second two bodies were fired at from 50 yards.

With regard to the effects of the firing, and judging as to the influence they would have on living horses, it may be remarked that a horse, and especially when madly excited, can only be stopped *at once* when shot in the brain, through the cavities of the heart, or when a large limb-bone is so broken that it cannot any longer afford support to the body during progression.

Therefore, putting aside the brain and heart wounds, which would be immediately fatal, but which are not those most frequently occurring in action, the damage done to limb-bones of horses is always an important consideration in estimating not only the penetrative force of a bullet, but its fracturing or pulverising action. Horses may go some distance after being shot through the lungs, or after important blood-vessels are divided, this depending upon the amount of hæmorrhage. With regard to other organs, they need not be taken into account, as injury to them will not immediately render a horse inefficient. Neither need injury to muscles by rifle bullets be considered of much importance in disabling horses quickly, as in these animals the muscular masses concerned in moving the limbs and sustaining the body are so voluminous that the damage done by a small bullet, unless it has become expanded or jagged through contact with a bone, will cause but little immediate trouble.

With regard to the comparative effects of the bullets from the Rubini and the Enfield-Martini rifles, there cannot be any doubt, judging from these experimeuts, that the bullet from the former has the most destructive effect upon such hard tissue as bone, and perhaps also upon soft tissue like muscle. The terribly destructive effect of this bullet upon bone was well seen in the shot above the knee and in that at the hip. Here the largest bone in the horse's body—the femur, or thigh bone—was struck at its thickest and strongest part near the hip-joint, and for some inches nothing larger than coarse grit remained: the immense bone was literally pulverised, as if crushed in a flour-mill; while the Enfield-Martini bullet, striking this bone in exactly the same place, had not the same pulverising power, there being more splitting and splinters, though the destruction of the bone was complete.

The destruction of muscle along the track of the bullets was noted, and the "pulping" was most marked with the Rubini bullet. The aperture of entrance was much smaller, and that of exit very much greater with it than with the Enfield-Martini bullet. This was well shown in the front chest shots passing through the heart.

When the Rubini bullet comes in contact with a hard substance, as bone, the copper covering flies off, and this in all probability increases the destructive effect, if not at the point of impact, at least around it. When it, however, enters soft tissues—as muscle—the copper remains, as was seen in one shot; so that the disorganisation which results cannot be ascribed to the action of the copper splinters.

To what extent the comparative effects of the two rifles and their bullets might be influenced by greater firing distances, it is for the Committee to decide. My own impression now is that, at the distances fired from in these experiments, the Rubini rifle is more destructive to animal tissues than the Enfield-Martini.

(*To be continued.*)

Reviews.

THE HORSE AND HIS RIDER: AN ANECDOTIC MEDLEY. By "THORMANBY." (London: Chatto and Windus. 1888.)

The writer who, under the *nom de plume* of "Thormanby," is so well known in sporting circles, especially by his clever book, "Men of the Turf," now presents us with a companion work on the horse and his rider, which is certain to be read by the great majority of those who love to read anything entertaining or informing pertaining to the most useful and enjoyable of all quadrupeds. We have perused the volume from end to end, and promise ourselves a renewal of the treat as often as opportunity offers. The twenty-two chapters of which the book consists are none of them dull, but, on the contrary, instructive, entertaining, or profoundly amusing. Racing, steeplechasing, hunting, horse-taming and breaking, special characteristics and endurance of horses and their masters, form the staple of the anecdotes and narratives, all told in a vivacious manner, and in a way to drive off sleep or dispel gloominess and melancholy. The story of Squire Chute and his servant, given at page 132, is certainly mirth-provoking to an extent we have seldom experienced. In treating of the endurance of horses, we do not find mention of the wonderful feats of the little Arab steeds ridden by the lamented Colonel Barrows' 19th Hussar troopers, in the Soudan.

THE HORSE. By SYDNEY GALVAYNE. (Glasgow: T. Murray and Son. 1888.)

Mr. Galvayne has made a reputation for himself as a tamer and breaker of horses in this country, and the work he has written embodies the principles and practice of the art he pursues so successfully. It gives these in detail, and we must admit that all who have to do with horses, and especially with handling them as colts or adults, tractable or vicious, must find much in the book to inform and instruct them. The author's system of horse-taming is, he says, an entirely new one, and he has sought to popularise it and make himself useful, by forming and teaching

classes of learners, and giving public demonstrations in many parts of the country. His experience has been chiefly gained in Australia—an excellent field, no doubt—and there are many points which are novel to us. For veterinary surgeons, there are numerous hints which should prove of value to them in their every-day business, especially those relating to twitching and casting. The anecdotal portion of the book is interesting, and indeed the little work deserves a favourable reception from horsemen and members of the profession, because of the amount of information and entertainment it offers.

Proceedings of Veterinary Medical Societies, &c.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of this Association was held in the Empress Hotel, Sunderland, on August 31st, the President, Mr. D. Dudgeon, in the chair.

Present—Messrs. D. McGregor, Bedlington; C. Stephenson, H. Hunter, W. A. Hancock, A. Hunter, J. W. T. Moore, Newcastle-on-Tyne; J. B. Nisbet, Fence Houses; Wm. Awde, Stockton; J. E. Peele, Durham; A. Chivas, Corbridge-on-Tyne; J. E. Tudor, South Shields; Wm. Temple, Chester-le-Street; John Gofton, North Shields; T. Jack and G R. Dudgeon, Sunderland.

Visitors—Messrs. Alfred Peele, D. Dudgeon, Jun., R. Brydon, and J. A. Morkeberg, of the Royal Agricultural Society, Denmark.

Apologies for non-attendance were received from Professors Williams, Axe, Walley, McFadyean; Messrs. W. T. Briggs, C. Hunting, G. Farrow, Jun., G. Elphick, and T. Greaves.

Mr. C. STEPHENSON then read the following paper on

HEREDITARY UNSOUNDNESS.

GENTLEMEN,—By the express wish of our much-esteemed President, I have this day the honour to bring before you the subject of "Hereditary Unsoundness," a subject of vast importance, and one that at the present time is commanding a large amount of attention.

I cannot possibly bring this subject before you in all its varied aspects; neither is it possible for this meeting to thoroughly discuss it. What I purpose attempting to do is to bring before you, as briefly as possible, those defects or diseases which in breeding animals are looked upon as hereditary, and to direct your attention to the subtle questions of "Heredity" and "Atavism."

When we in our learning speak of heredity and atavism we are only giving expression to the old-fashioned truism that "like begets like." By "heredity" we mean the transmission of the characters and peculiarities of parents to their offspring; and the word atavism is applied to those cases in which the peculiarities, type, markings, etc., of some old ancestor, aristocratic or plebeian, as the case may be, reassert their latent powers and are reproduced.

This throwing back, as it is termed, is a very interesting subject, particularly to breeders; but as it is only a branch of the main question before us, I need not dilate further upon it. Before proceeding further I think it will be advisable if we refresh our memories by casting back and recalling as many instances and cases as possible in which we have seen heredity assert its powers. I know that you have all seen many such cases, both in man and the so-called lower animals—cases in which peculiarities of form, temperament, malformations, diseases, and vices could be clearly traced from parent to offspring, and were, in fact, characteristics of certain families.

Not that every member of a family or descendant of a sire is constituted or affected alike. Some escape the family characteristic, or it may lie dormant; but the tendency is there, and will, under favourable circumstances, assuredly be developed or reproduced.

Striking instances of "heredity" are found in the human family, but as veterinary surgeons we will on this occasion confine our attention to our friend the horse. It is neither advisable nor necessary to mention the name of any particular sire, knowing as I do that every one interested in horses and their breeding will be able to call to mind numerous cases in which the offspring of certain sires were noted for special or uniform qualities—cases in which temper, action, stoutness, softness, soundness, and unsoundness, together with peculiarities of form and colour, were family characteristics. As striking, common, and harmless examples of heredity I have only to mention the lop ears of the Melbournes, and the sprinkling of white hairs that in old times denoted the McOrville blood, and in more recent times the Bird-catchers.

With these few introductory remarks I will now notice the principal diseased conditions met with in the examination of horses. Beginning with the eyes, I take it that we shall all agree that "Cataract" is an hereditary unsoundness; and I trust you will forgive me for mentioning that examination of the eyes requires great care and judgment. I don't think that any experienced examiner would confound opacity of the cornea with Cataract; but I would direct your attention to the changes produced in the eye by old age, changes which require due attention before pronouncing an opinion.

Wind.—In my opinion Roaring, Whistling, and Grunting should be classed together as variations of one disease, and condemned as hereditary unsoundness. This may be a too strong, a too sweeping assertion to some, *i.e.*, so far as regards Grunting, but, gentlemen, my experience is that Grunting is too often only a forerunner of Roaring, and that as a rule Roaring and Grunting go together. I am well aware that horses sometimes grunt, and yet make no noise in their gallop; but grunters always take the first opportunity—the slightest excuse—to develop and perfect their musical tendencies. Some may say that Grunting is no sign of Roaring. Quite so; neither is it a test for roaring. I have known bad roarers that did not grunt; therefore the absence of the usual grunt of the roarer is not a sure and reliable test for soundness of the wind.

Splints.—Splints of themselves, and upon young horses, are not, in my opinion, hereditary; but if found upon a mature horse, and especially if accompanied with bony deposits upon other parts, they should be looked upon as hereditary. Splints are often the result of work and concussion, but some horses have a tendency to throw out or deposit bony enlargements. I once had a patient of the latter description, a well-bred hunter, and a troublesome one he was. Eventually I had the opportunity of making a *post-mortem* examination upon his remains, and so strongly was this bony diathesis developed in his system that the coats of some of the arteries had been changed into bony cylinders. Splints may be, and often are, quite independent of heredity. I would just mention here that I knew a thoroughbred sire, perfectly free from bony enlargements, in fact sound, and yet a large percentage of his stock were affected with splints. How far atavism will account for this case I leave you to decide.

Ringbones, whether large or small, upon the fore pasterns or upon the hind ones, even if they do not cause lameness, must be considered as hereditary. Before condemning a horse for Ringbone, care must be taken that the enlargement is neither due to a fractured pastern nor to break-down of the suspensory ligament.

Sidebones.—The heredity of Sidebones is so patent and well established that I simply mention them to complete the list of hereditary diseases.

Diseases of the Foot.—Approaching this part of our subject I do not expect unanimity of opinion. The feet of horses vary more or less in size, strength, and shape. We may have personal objections to a particular kind of foot, but if the feet are natural, free from visible disease, and the horse goes sound, we, as veterinary surgeons, should not, in my opinion, object to them. It is not always the best-looking feet that wear longest, and it is no unusual thing to see narrow, donkey-like feet stand work remarkably well. At the same time, I think that veterinary surgeons should, when called upon to examine a horse, always point out any peculiarity or deviations in the shape of the feet.

When I say that "*Navicular Disease*" is hereditary I do not anticipate opposition from any one; but when I say that in my opinion "*Laminitis*" is hereditary I know that men of the highest standing will say No.

Now, I freely confess that the result of my inquiries *re* the heredity of Laminitis is almost nil. I have only come across one gentleman who said he had seen malformed feet in young horses sired by a stallion suffering from Laminitis. On the other hand, I have the testimony of A. B., an expert in horse-breeding. He has three stallions, all suffering from chronic Laminitis. Nos. 1 and 2 have been affected for twelve years, and No. 3 for eleven years. He tells me that he has records of over 2,500 foals by these horses, none of which are affected with Laminitis; but he observed No. 3 has upright pasterns, and all his stock have the same defect. I have received similar information from another gentleman who has owned sires that suffered from Laminitis.

In considering this particular disease we should not expect to see it developed in young animals before they are put to work, any more than we should expect to see Navicular Disease. The question is, Are the produce of horses so affected more prone to the disease? Is there a greater tendency to develop it when put to work than in stock sired by a horse with perfectly sound feet? I think there is, and I have always rejected sires that were suffering from Laminitis.

I may mention that I have this year seen three young horses with feet of such a character as at once to draw attention to them. No. 1, a four-year-old, feet blocky, and marked with small rings; goes sound. The dam of this colt before being put to the stud was so lame from Navicular Disease as to be valueless. No. 2, a one-year-old, odd feet, goes sound. His sire has odd feet. No. 3, a three-year-old, feet large, thin, and suspicious-looking, but goes sound. The sire of this animal was affected with chronic Laminitis.

Sandcracks and marks of old sandcracks, independent of accidental causes, would, in my opinion, justify the rejection of any sire so affected.

Now, gentlemen, we will pass on to the hind legs, and I take it that all will agree that *Spavin* is an hereditary unsoundness. Unfortunately, trouble often arises as to whether a horse has Spavin or not. When they are large there is never any dispute as to their nature and importance; it is the little ones and the tarsal ridges that lead to so many disputes. Well, we are not all blessed with the same amount of knowledge, natural or acquired, neither have we all the same delicacy and perception of touch and eyesight, and we can only hope that these unfortunate disputes will be few and far between in the future.

Curbs and Curby Hocks.—Curbs are not hereditary, but curby-looking hocks are. A horse with the best of hocks may at any time by some severe exertion spring a curb, but it is only a temporary injury, neither permanent nor hereditary. On the other hand, a sire free from curb, but with curby-looking hocks, will transmit the defect or peculiarity (call it what you like) to his stock.

Stringhalt and *Shivering*, being nervous affections, are pre-eminently

hereditary. These defects, if not carefully and especially looked for, may escape detection. When found there should be no doubt as to their condemnation.

Bursal enlargements in a sire seldom receive that attention which in my opinion they deserve. I have no doubt as to their heredity.

Now, gentlemen, we will notice the ticklish question of *odd feet.* Many horses, particularly amongst thoroughbreds, have odd feet. They run in families, and are decidedly hereditary. Odd feet may be sound feet, and remain sound at work. Because a foot is smaller than its fellow, it does not necessarily follow that it is diseased or unsound in any way. Odd feet are objectionable, just the same as turning the toe out or in would be, but if with the exception of being smaller than its fellow, it is sound and of good shape, and the horse is free from lameness, I cannot see that we are justified in condemning the horse as unsound. While saying this, I fully admit the heredity of odd feet. A foot, in addition to being smaller than its fellow, may be, and often is, more or less deformed; narrow and high at the heels; upright in front; there may or may not be lameness, but these cases should, in my opinion, be condemned as unsound. The slightest trace of disease or lameness in odd feet justifies rejection.

Over and above the diseases I have mentioned, there are others occasionally met with, and which deserve some of our attention, namely, *Broken Wind*, *Greasy Legs*, and *Mallanders.* The latter I would not have mentioned but for the fact that I recently saw a cart stallion objected to for having only slight remains of Mallanders. Although Broken Wind and Greasy Legs are largely due to bad management, and admitting that both affections may by treatment be much modified, if not cured, yet I would condemn any sire so affected.

I will now direct your attention to *acquired unsoundness*, which will open out a large field for our thoughts and investigations, and one upon which some of us will, I expect, agree to differ.

This portion of our subject presents itself to us in two aspects: in the first place, how are we to detect, or can we detect, the difference between acquired and hereditary unsoundness? and secondly, is the acquired unsoundness hereditary?

Beginning at the eyes again, cataract, which is admitted to be hereditary, my be, and often is, the result of an accident. I have known cataract to follow even a slight blow from a branch in a fence. I have also known dislocation of the lens, and even entire destruction of the eye, follow an accidental injury. I have seen complete cataract in both eyes follow acute rheumatism, and I have seen total and continued blindness (amaurosis) resulting from a severe blow upon the occiput, accompanied with great loss of blood.

Now, gentlemen, whether the cataract is due to heredity or to accident, their appearance may be the same. There is no mark by which to distinguish the one from the other. True, a history of the accidentally caused one might be given, but might not be credited. The question arises, Are both to be rejected? or is the proved accidental one to be passed?

Much the same kind of argument might be used to many of the diseases which we admit are hereditary, but I need not follow this line further. I will only mention a few cases that point to acquired injuries being transmitted to offspring.

Ear Marks.—In August, 1880, I bought a lot of Irish heifers to feed off. They were ear-marked. One of them appeared to be in calf, and produced a calf with ears marked exactly the same as its dam.

At the beginning of the present year I came across a pedigreed cow (V) with calf at foot, both of which had short ears; the tips of both ears were

absent. This being a registered animal, I had no trouble in tracing her history, which I found to be as follows: She was calved with short ears, but her first, second, third, and fourth dams had perfect ears. She did not transmit the peculiarity to all her progeny, but her last two calves (bulls) had both short ears.

Deformities Resulting from Injuries.—About six years ago a hunting mare suffering from split pastern was given to a friend of mine to breed from. No treatment had been applied to the pastern, and as a consequence it was much deformed; the foot was turned outwards, and the upper portion of the pastern had come downwards and inwards. There was no fault in the first foal, but the second one when I first saw it had a foot and pastern almost the exact reproduction of the dam's deformity; but being young, immediate and continued careful treatment resulted in a satisfactory improvement. The third and fourth foals were all right.

These cases may not be of much value to the controversy; however, they are facts, not hearsay, and I venture to think of some value. On the other hand, I admit that no matter how short we dock our horses, dogs, and sheep, neither the foals, puppies, nor lambs come with shortened tails.

As bearing somewhat on this subject, I wish to mention that a veterinary surgeon in Northumberland told me recently that he had attended four foals this season suffering from *Open Urachus.* They were all by one horse, and he was affected with Laminitis. I trust that if any gentleman here has experience of Open Urachus being common or confined to the get of any particular horse, that he will give us the particulars. I may just remind you that Williams speaks of Open Urachus as a symptom of scrofulous disease associated with Ostitis.

Proposed Changes.—The following is an extract from a reported meeting of the Hunters' Improvement Society:—

The Council have carefully consided the important question of veterinary examinations at shows, which has been raised by the letter of Sir Henry Simpson, read at the general meeting of members held at the Royal Agricultural Hall; they therefore propose, as there is a diversity of opinion among the veterinary profession as to what constitutes hereditary unsoundness, that the veterinary inspectors, after examining the horses submitted to them, will fill up the following certificate, which will be handed to the judges by the stewards; the judges will then use their own discretion as to the award of premiums:—

REPORT OF THE VETERINARY INSPECTORS TO THE JUDGES.

Thoroughbred Horse No.....

Eyes .....
Wind .....
Fore legs .....
Hind legs .....
Feet .....
Remarks if any:—

..... } Veterinary
..... } Inspectors.
.....

Date.....188

This proposed change must be very unsatisfactory to the profession, and it is certainly hard upon the judges to add to their responsibility by asking them to decide as to what shall constitute unsoundness.

As a result of communications from the Royal Commission on Horse-breeding and the Royal Agricultural Society, the Council of the Royal College

of Veterinary Surgeons have decided to hold a conference to discuss and report upon this question, *i.e.*, to decide what diseases are to be considered as constituting hereditary unsoundness. Some members of the profession attached great importance to this conference, and speak as though its decision would settle the question. That is not my opinion. I have no doubt but that the conference or committee who have the question in hand will easily agree, when sitting round a table, as to what is and what is not hereditary unsoundness; but disperse them to the actual work of examining horses, and the same old disputes will arise—not as to whether Spavins, Ringbones, and Sidebones constitute unsoundness and are hereditary—no one that I am aware of disputes that—but the dispute will be as to the actual existence of the diseases named. Some gentlemen will detect them easily, whilst others will entirely fail to do so.

In connection with this subject much valuable information may be learned from the work carried out by seedsmen and gardeners who make a speciality of producing high-class pedigree cereals and plants. The secret lies in selection. Only the most perfect grains of the most perfect plants are used for propagation. Of course along with selected seed there must be land and surroundings well adapted to produce best results. The same theory and practice hold good in breeding animals, and only sound, good animals should be bred from; but as mares do well to produce one foal per year, whilst the the stallion may beget 100 in the same time, it follows that the greatest importance must be attached to the soundness and general excellency of the sire, and more particularly is this so when we remember that his external characteristics, colour, action, etc., will to a large extent be reproduced in the foals.

I am confident that the more you investigate this subject as developed and seen both in the vegetable and in the animal kingdoms, the more you will believe in the subtle and far-reaching power of heredity, and the more importance you will attach to the selection of breeding animals. Allow me again to say that only sound animals should be bred from; at any rate be sure that the sire is sound and true to his particular type. Gentlemen, I have purposely curtailed my remarks, so as to give you as much time as possible to discuss the question. Before leaving it in your hands, I may remind you that although the question is at the present time occupying a great deal of attention on both sides of the Atlantic, there is really nothing new in it. We have, no doubt, thanks to Darwin and other workers, extended our knowledge upon it, but our Great Master in His supreme wisdom concentrated and expressed the whole truth when He said, "A good tree bringeth not forth corrupt fruit; neither doth a corrupt tree bring forth good fruit. For every tree is known by his own fruit. For of thorns men do not gather figs, nor of a bramble-bush gather they grapes."

The PRESIDENT next read a letter from Mr. T. GREAVES, of Manchester, which ran as follows:—

"The subject of Hereditary Unsoundness is one of very great importance. It is a complex subject, and for its full comprehension much anxious thought and patient investigation are necessary. I regret exceedingly I cannot be present to hear Mr. Stephenson's address upon this very interesting subject. I feel assured he will look the difficulties fairly in the face, and in a clear, bold, exhaustive speech trace out some guiding principles, enabling the profession to adopt and establish some definite, sound, common-sense decision in the matter.

"I desire to refer to only one of the many causes of Hereditary Unsoundness, viz., *Roaring*. The ideas I wish to bring before your notice are new; at least I am not aware of any writer or speaker having noticed them when treating on Roaring.

"For some past I have been making this subject a special study, and have made many *post-mortem* examinations of the larynx and recurrent nerves of horses which were roarers, and others which were not roarers. I find in all roarers where there is the usual defect in the arytenoid and crico-arytenoid muscles on the left side, that the recurrent nerve of that side is defective also —in many cases the *recurrent nerve does not reach the larynx at all;* the fibres of this nerve spread out or disperse themselves in the cellular tissue—and that not the slightest vestige of nerve tissue reaches within four or six inches of the larynx, and my conviction is that this nerve has not at any period of life given off any nerve force or influence to the larynx on that side; but at the same time, the right recurrent nerve which supplies the muscles and right side of the larynx is vigorous and strong right into the membranes and muscles on that side, the muscles of which are plump, fleshy, and well-nurtured, whilst the muscles of the other side are blanched, wasted, and apparently useless and helpless. In other roaring horses I have found the left recurrent nerve as thin as a third thread, instead of being as thick as a crow-quill. I find the thin nerve appears to have no nature in it; it breaks on the slightest tension as if rotten, while the other is as strong as whipcord. I find the recurrent nerves on both sides are thick and strong in all cases where the muscles of the larynx are in a sound and healthy condition.

"Now, the deductions or the conclusions I have arrived at are these: Firstly, that the blanched, wasted conditions of the muscles of the larynx of a roarer *have not always been in that condition*, but that at birth they were all alike well-developed. There being no breathing before birth, the muscles were not called into action; the muscular fibres could develop in accordance with the general law of growth, and at birth the muscles would be brought into action for the first time, and for a time the muscles might act until, as time went on, the want of nervous energy would be felt, and degeneracy of muscles be the result. Secondly, that the left recurrent nerve *was always the same from the earliest period of utero-gestation.* If this theory is correct it is truly an hereditary defect, and no human aid can possibly cause these muscles to regain their strength and vigour or the nervous fibres to elongate. The removal of the vocal cord and crico-arytenoid cartilage may remove an obstruction, and thus mechanically obviate Roaring. In this manner it is conceivable it can cure Roaring artificially.

"THOMAS GREAVES, F.R.C.V.S."

Mr. H. HUNTER, in opening the discussion on Mr. Stephenson's paper, said the subject was of very great importance, but that town practitioners had not the same opportunities of judging as country ones. He agreed with Mr. Stephenson that Roaring and Whistling were simply stages of the same disease, both bad faults and unsoundnesses. He did not quite agree with Mr. Stephenson in his remarks about Splints. In young animals they were troublesome, but in older ones they were not so important. Narrow feet were suspicious, but sometimes they caused no unsoundness. Odd feet also were to be looked upon with suspicion. At present he was driving a mare with odd feet, and she went perfectly sound. Navicular Disease is hereditary, and he would object to a sire with Laminitis being used for stud purposes. Curby hocks are most objectionable. He thought Grease somewhat hereditary, and that the question of acquired defects was a very difficult one to go into.

Mr. BRYDON said he had listened with great pleasure to Mr, Stephenson's able paper, and in the main agreed with what he had said. He did not agree with him on the question of Grunting, as he had known old stallions develop Grunting, and yet were perfectly sound in their wind, and he attributed it to the manner in which they were treated. They had to work hard for three months in the year, being heavily fed during that time, and the other nine months of the year they were turned into a shed, and sometimes fed on

almost anything. Laminitis, in his opinion, was not hereditary, and he instanced a stallion which had chronic Laminitis, and which had served, to his knowledge, between seven and eight hundred mares, and in no case was his progeny affected. With regard to acquired defects, he said it was the practice in Shetland to mark the cows by cutting the tips of the ears off, and it was no uncommon thing to find the progeny have the same marks. At Nottingham this year a great fuss was made about a stallion being rejected as unsound, and yet going to another show and being passed sound. He thought this was a great disgrace to the profession; veterinary surgeons should be unanimous in their opinions. Breeders put it down to jealousy. He concluded by strongly advising the veterinary profession to arrive at what diseases were hereditary and what not.

Mr. McGREGOR said that formations may become hereditary, and agreed that "like begets like." Jacob knew that well. He put down Grunting, Roaring, and Whistling as due to the same cause. Splints and Sidebones were hereditary. Laminitis could be induced by careless feeding. He knew of sires having Laminitis, but never heard of their progeny being affected. The worst cases of Laminitis were seen in deep-footed animals, and they rarely become sound. He did not agree with Mr. Stephenson in his remarks about Sandcrack, and thought this disease was more frequently due to accident, and partook more of an injury than disease. Curbs were hereditary. If a sire got Curbs he produced curby hocks. In his opinion Broken Wind was not hereditary. With regard to acquired defects, fox terriers sometimes drop pups without tails. He thought they should be unanimous on the subject.

Mr. A. HUNTER said one thing Mr. Stephenson had not mentioned in his paper, and that was crib-biting. He was inclined to think that it was hereditary.

Mr. NISBET thanked Mr. Stephenson for his paper, and said he agreed with almost everything he had said. He did not think chronic Laminitis was hereditary. He thought Splints were peculiar to the horse, as they were rarely seen in cattle or donkeys. He mentioned two very interesting cases in breeding. One was a mare; all the colts she had were sound and could race; the fillies could not, and were of no use. The other was a mare that had a box foot. All the mares she bred had the same defect, but the colts were all right. He would like to suggest that the papers should be printed, and sent to each member before the meetings. He also related a case in which a stallion had the peculiar habit of standing with his hind legs crossed and a number of his foals stood exactly like him.

Mr. PEELE said that he could not add much to the discussion. With regard to Whistling, he thought that it seldom turned into Roaring. He thought an animal affected with Laminitis might produce stock having a tendency to the disease. In the county of Durham they looked well to the sires, but bred from any sort of mares. In his opinion the mares should be as sound as the sires. He found that Umbilical Hernia frequently ran in families. Scrotal was not so common.

Mr. A. CHIVAS expressed the pleasure with which he had listened to the paper, and agreed with a good part of it. He thought that Grunting was the forerunner of Roaring, and it was very questionable whether Laminitis was hereditary. If a mare with good sound feet became affected with Laminitis he would have no hesitation in breeding from her; but if the feet were not good before he would not breed from her. With regard to Open Urachus he always found it in connection with Scrofula. He recently had a great number of foals affected with this disease, and they were all got by one horse. He related a case of a mare which bred a foal for three years, and all of them died from this disease. The mare did no work, was taken in to foal, shut up

in a box, and well fed. He advised the owner to make no alteration in the feeding of her, simply letting her get what was in the field. He allowed her to foal in the field, and she has since bred three foals, and none of them are affected with Scrofula.

Mr. GOFTON thought that Umbilical and Scrotal Hernia were hereditary, and coarse-bred animals were more liable to Laminitis than others which were better bred. He instanced a brood mare which was a bad roarer, and all her stock were similarly affected.

Mr. AWDE said he would object to brittle feet as the most likely to produce Sandcrack. He agreed with Mr. Peele that more attention should be paid to the mares that are used for breeding purposes. He considered Umbilical and Scrotal Hernia and Grease were hereditary.

Mr. MOORE said he would not like to say that Laminitis was hereditary, but agreed with Mr. A. Hunter that crib-biting was.

The PRESIDENT said one thing Mr. Stephenson had not mentioned, which he considered was most certainly hereditary, and ran in families to an alarming extent, and that was "bad temper."

Mr. STEPHENSON, in reply, said all the statements he made in his paper referred solely to breeding animals. He could not agree with Mr. Brydon respecting Grunting being developed in old stallions. If he found a stallion on examination was a grunter he would condemn him. What Mr. Brydon had stated with regard to 700 mares being served by a horse affected with Laminitis, and none of their progeny having the disease, were the facts which were wanted; but what he wanted was that only perfect animals should be bred from. Mr. Brydon confirmed what he said about acquired marking. He did not agree with Mr. McGregor that Sandcracks and Broken Wind were not hereditary. The cases that Mr. Nisbet had related were most interesting. He could not agree with Mr. Peele that Whistling did not turn into Roaring. Umbilical Hernia he had found to run in families. He agreed with the President that bad temper was hereditary, but it was not an unsoundness. He concluded by reading several interesting extracts from an American journal bearing on the subject, and said what he wanted was that both animals should be perfect; but if this could not be got it was of the utmost importance that the sire should be perfectly sound.

The PRESIDENT was desirous of going through the different diseases mentioned in the paper, and taking the opinion of the members as to whether they were hereditary or not. After considerable discussion it was ultimately agreed to, on the motion of Mr. MOORE, seconded by Mr. NISBET, "that the paper, and remarks made by the members on it, be printed and circulated among the members only, for discussion at next meeting, and if desirable the President and Secretary may call a meeting of the Association before the usual time if they think it necessary."

A letter from Mrs. H. Peele, West Hartlepool, acknowledging a vote of condolence on the death of her husband, passed at last meeting, was ordered to be entered upon the minutes.

The PRESIDENT reported that he had received a letter from Mr. Wilson, Berkhamsted, on the subject of the horse-tax, and that he had written to each of the Members of Parliament in the counties and boroughs of Northumberland and Durham on the lines suggested by Mr. Wilson, and had received favourable replies from them all.

The SECRETARY read the alterations to the rules which the Committee elected to revise them had agreed to. The report was confirmed, and copies ordered to be printed and sent to each member.

Mr. TUDOR exhibited some interesting morbid specimens.

Mr. MOORE proposed, and Mr. MCGREGOR seconded, a vote of thanks to Mr. Stephenson. Carried *nem. con.*

Mr. STEPHENSON said he was pleased to do anything for his friend Mr Dudgeon, and it was at his suggestion he had prepared the paper.

A vote of thanks to the President terminated the meeting.

G. R. DUDGEON, *Hon. Sec.*

THE WESTERN COUNTIES MEDICAL ASSOCIATION.

THE tenth meeting of this association was held at Chubb's Hotel, Plymouth, on October 29th, J. P. HEATH, Esq. (President), in the chair.

There were also present—Messrs. W. H. Thomas, T. Endle, J. Squire, W. H. Bloye, P. G. Bond (Plymouth), A. H. Oliver (Devonport), R. E. L. Penhale (Hatherleigh), T. T. Harvey (St. Columb), J. H. Penhale (Bideford), J. Hammond, A.V.D., W. Penhale (Holsworthy), and the Secretary.

Letters and telegrams of apology for inability to attend the meeting were received from—Messrs. H. P. Chase, G. H. Elder, C. Parsons, C. Hoadley, T. Olver, and J. A. Collings.

The minutes of the last meeting were read and confirmed. Messrs. Baker, of Crewkerne, and Bond, of Plymouth, were elected new members of the Association.

The PRESIDENT stated he had been in communication with Mr. Goschen, through Sir Stafford Northcote, relative to the tax on horses, and there was every probability of veterinary surgeons being placed on the same footing as medical men, if veterinary surgeons called on their respective members of Parliament to vote for the exemption.

Mr. J. H. PENHALE related the singular case of a cow which had a nail piercing the left hemisphere of the brain for an inch and a-half, and although the animal showed some inability to walk, yet she ate her food and ruminated for twelve hours after first being observed unwell. The nail was discovered at the post-mortem examination.

Mr. Squire exhibited a large calculus found in the single colon of a horse, and which produced stoppage and death.

Mr. HARVEY recommended tracheotomy as a preventive of severe cases of straining, due to irritation of the uterine organs; he had successfully treated a cow in this way.

The PRESIDENT then read a paper on

THE LAMB MORTALITY.

GENTLEMEN,—It is rather an invidious position to be placed in, when, as President of this Association, you are politely told by our respected Secretary almost at the last moment, that he has failed to induce any of the members to bring forward an essay for discussion, and that perhaps you will give a Presidential address.

Now, having only a few meetings ago had such an address from one of our most able members, I felt I should be at a loss to find anything new to bring before you. I also felt that it would be somewhat of a reflection on me as the object of your selection for my responsible office, did I allow you to assemble during the year without something to be discussed besides the ordinary routine of business.

Therefore, at the same time that I introduce a somewhat novel subject to your notice, I expect more benefit to accrue to the profession and to the public from its being thoroughly threshed out in debate by practical men like those I see around me, than by a short crude paper, written in such a brief period of time, and, therefore necessarily undigested and incomplete.

If your time should be found to have been unprofitably spent, I hope you will not think that such was my desire, but attribute it to the want of ability; be magnanimous *before*, as I am sure you will be *after* dinner, and take "the will for the deed."

The subject I beg to introduce is that of "The Lamb Mortality," on which many may remark that they did not know that there was any mortality amongst lambs, simply because there are no statistics published by Government, the diseases which are most fatal in an ordinary, or general way, not being included among those which come under the operation of the "Contagious Diseases (Animals) Act." But when I tell you that, of my own personal knowledge and calculation, over 10,000 lambs have died since weaning time this year, in this county alone, that it is the exception to find a farm of any size on which from five to twenty-five animals have not been lost, that in one instance 120 out of a total flock of 180 lambs have died in my neighbourhood, and that in several cases during the past two or three months, the farmers were losing them so fast that they had the whole of the young flock sold for what they would fetch, to the butchers, to be killed in store condition —then I think that you will consider that the subject is not an unimportant one to ourselves, to our national food supply, or to the public health.

Being satisfied that there is such mortality, the question arises, What is the cause of it?

To an experienced expert, who, perhaps like myself, for over twenty years has been consulted about from twenty to thirty thousand lambs per annum, there is no difficulty in answering the question. There are *several* causes, differing in different seasons, but only three or four principal causes, and these largely dependent on their treatment by their owners.

The principal causes this season have been the cold, wet, inclement weather, and the injudicious use of the sheep-shears. The greatest losses I have found among those lambs fed only on young watery green crops, grass, vetches, etc., and which had been shorn during wet weather, the quality of the food not giving the animals the stamina necessary to successfully resist the chill to the system. It seems to me to be wrong for farmers to fix the day for the gang of shearers to strip their flocks, regardless of what the weather may be; the old sheep may be able to stand the process, but I have little doubt but that the seeds of disease are thereby sown to a great extent among the lambs. The same remark also applies to the weather, and the state of their health before dipping. In making post-mortem examinations of such cases, I found that the appearances differed in different animals of the same flock, the chill in some cases settling to inflammation of the lungs, in others to inflammation of the muscular structure of the bowels; while in some the mucous membranes of the stomach and bowels appeared to be the only parts affected, just as chills among ourselves find out the weakest spot in the system. The losses from the above causes were much fewer where corn, cake, and manger food had been given to the lambs, and all practical men know the difficulty of getting a young sickly flock to eat this class of foods if they have never tasted them before when in health. In some cases a few late lambs in a flock were not shorn, these appeared perfectly healthy, whilst the remaining portions of the flocks were dying all around them every day, and in one case, a lamb affected with maggots, which was covered with a coarse cloth to keep away the flies, was the only one of the flock which kept perfectly healthy, and I cannot but attribute its immunity to the protection afforded by the covering it wore.

Most of the deaths which I attribute to this cause took place about the month of July, before the ordinary period in which the common Husk or Cough generally shows itself in a dangerous form.

The only treatment I found of any use in the foregoing cases, which of course varied in symptoms from Shortness of Breath to violent Diarrhœa, but were always associated with loss of appetite, was to shelter the whole flock every night in sheds, by which I believe hundreds were saved, and to keep the worst cases under cover in wet weather by day as well as by night,

giving all that would eat it, good hay, corn, or cake, and administering to those which could not be got to feed, nice thick oatmeal gruel two or three times a day, combined with methylated spirits of wine—the cheapest preparation of alcohol we have—half a pint of the latter to a gallon of gruel, administering nearly half a pint of the mixture at a time to the lamb.

The past being an exceptional season, I consider the young flocks required exceptional treatment. Many animals which did not suffer so much have since shown symptoms of a weak state of the system by Dropsical Swelling, especially about the head, due no doubt to holding down the head in feeding on the unripened watery diet peculiar to the season 1888. Later on this year we have suffered great mortality among our lambs from diseases which occur, more or less, in every season, viz., Cough dependent upon worms (Filaria bronchialis) in the windpipe and lungs; Tapeworms in the Stomach and Intestines; Fever of a low Typhoid character; and Scour or Diarrhœa.

The pathology of the cough due to Filaria is so well known to the profession, that it would be superfluous on my part to refer to it. The remedies, too, are well known, viz.: iron mixed with the manger food, and sometimes administered in combination with turpentine, oil of amber, linseed oil, and lime water, etc., many practitioners, especially the non-qualified ones, possessing panaceas for this and other complaints, but in bad cases I have found great benefit from shelter, even in those cases by night, especially in inclement weather. The tapeworms can be got rid of by areca-nut and turpentine without much trouble, when it is known that the flock is infested with these parasites, which, although you may suspect, yet can only be ascertained with certainty by the close watching of their droppings by the shepherds, Many flocks "do badly" from this cause, which, not being commonly apparent, is a great puzzle to the owners. Although these parasites may not cause death, yet they weaken the animals in which they find their habitat, thus rendering them less able to withstand an attack of Husk or Scour, and proportionately more difficult to rear.

The next disease I shall mention, which is very fatal, often destroying nearly the whole of a flock, is a fever of a low Typhoid character, very insidious, not exhibiting very active or violent symptoms, may not even be associated with either Cough or Scour, yet the lambs, in the language of the farmer, will "pine right away," and appear to die of inanition. The cause of this is difficult to ascertain. It may be that the sheep are too *thick* on the land, or that the water they drink may be impure—surface, or stagnant water, as I have found it most frequent in dry seasons, or from chill after dipping, when dewy nights are prevalent, or it may be owing to being kept on dry, indigestible food, prevalent in dry weather. Whatever the cause, the symptoms are a great craving for water; irregular motions, sometimes hard, sometimes with diarrhœa, covered with mucus from the membranes. The conjunctiva becomes nearly as white as paper, the ears droop, and the lamb can scarcely stand for a day, or sometimes two days before death, which appears to be caused by want of nourishment, due to the mal-assimilation of the food by the digestive organs.

If you kill one that is in this semi-comatose state, unable to rise from the ground, you will scarcely find more than a few drops of blood come from the throat; all the internal organs of the body are pale and bloodless, with the exception of the true digestive or fourth stomach, and the small intestines, which show irritation and slight redness on their internal surfaces. The treatment I have found most effectual in these cases has been to administer on the first day, half an ounce of sulphate of magnesia dissolved in warm water, to the whole of the young flock. The next day, and as long as necessary, daily to give cinchona bark, or its active principle, quinine, combined with iron, and those which are past feeding themselves can have these same

remedies in combination with linseed or oatmeal gruel. By these means I have several times saved every lamb I have treated after thirty, and even forty per cent. of the whole flocks had previously died. The best foods I can recommend for these cases (or for any sickly lambs) are rape or cole cabbage, or thousand-headed kale, young clover, and good linseed cake or oats. I know several farms where there used to be great mortality in the lambs almost every year, on which these crops are now grown for the young sheep, by my advice, with most marked benefit to the health of the flock, as in the hottest seasons they form a cooling succulent diet which appears to suit their digestlve organs. Occasionally I have found nothing effectual but removing the flocks away altogether to another kind of soil and herbage.

The last disease which I intend to mention is the ordinary Scour or Diarrhœa. This is often associated in lambs with other diseases; for instance, lambs suffering from Husk or Cough are frequently affected with Scour before death. Such cases must be treated for Cough, as beforementioned, or you will have little chance of curing the case; but the anti-parasitic medicines can be combined with chalk, catechu, opium, or small doses of carbolic acid. Again, Diarrhœa may accompany the low-fever. It is obvious that in such cases you must remove the cause—the fever—before you can expect to cure the Scour, or your treatment would be simply palliative and not remedial.

In other instances it may be simply from improper food, either indigestible, unnutritious, wet, frosty, or insufficient in quantity, which the practitioner must alter in addition to his medical treatment if he wishes to be successtul. Often he will find *shelter* a most useful adjunct. Many owners of flocks are now keeping portable shelters to go from field to field on wheels, in the same manner as the feeding-racks are taken all over the farms. This is especially valuable for young lambs in the very early wet spring weather on damp, heavy land. I have recommended them for years, and think the profession may well do so with advantage to their clients.

Apart from the above causes, common Scour in lambs is very amenable to treatment. Often dry food, oats, cake, or hay will stop it if they can be got to eat it. The same kind of food given to the ewes will often remove Diarrhœa from the young lambs they are suckling; if not, in very young animals, under a month old, methylated spirits or brandy alone in starch or oatmeal gruel is generally sufficient. For older lambs the ordinary chalk, peppermint, and opium cordial seldom fails, given in starch gruel, but I prefer an addition of some form of alcohol, and a few drops of carbolic acid. In other instances a little turpentine and opium has a marked effect, but all treatment largely depends on attention to diet, and the close watching of the flock by the shepherd, so as to attack the malady on its first appearance.

In conclusion, I may remark that I have not written a highly scientific pathological paper, because I am addressing a number of pathologists who have studied all these classes of diseases scientifically for themselves, but have mentioned the results of long practical experience and tolerably close observations, some of which will not be found in any veterinary works that I am acquainted with, in the hope that they may be of benefit to those younger members present residing in agricultural districts, helping them in their contests with their numerous quack competitors, at the same time that they benefit their employers, the agriculturists, and so raise the profession in the estimation of the public generally.

Mr. Bond believed the excessive mortality among lambs this season (there was no denying it had been very great) was due to the inclement weather, for during a great part of the summer the storms had been like those of October and November, rather than those of June and July. In such a season young immature animals required more shelter than was generally

allowed them; a liberal supply of artificial food would be found of great benefit. He did not recommend rape, as he had known weakly lambs die very rapidly after being turned into it.

Mr. J. H. PENHALE thought it a mistake to overcrowd lambs on a farm, and it was ruinous to put lambs on old pastures after adult sheep. In this way the soil and pastures, and probably water, also became infested with germs and parasites; in young, highly-bred, and weakly lambs, these parasites found a very favourable home, and if curative measures were not speedily taken large numbers would soon succumb to their ravages.

Mr. SQUIRE related a case of excessive mortality among Scotch sheep, which had been imported by a gentleman to the Dartmoor Hills. At times the fatality was so great that as many as five hundred sheep would die in a single season. He had made numerous post-mortem examinations, and all he could find was a flabby condition of the muscles, and a want of tone in every tissue of the body. He came to the conclusion the system of the sheep required some constituent which the Dartmoor pastures did not supply; he consequently recommended the owner to procure keep for the period of a month every year elsewhere; this proved eminently satisfactory, the mortality among these sheep now being no higher than among sheep generally.

Mr. PENHALE, Jun., said that sheep in his immediate neighbourhood had fared very well during this season; but he quite agreed with the President that young sheep especially required more care and attention than was usually bestowed on them; the lambs certainly should not be shorn, and the more artificial food they got through the first summer and winter the better. In his opinion there was a considerable amount of evidence which would go far to prove that the sheep was not as yet a thoroughly acclimatised animal; this being so, artificial means must supply what was lacking in the sheep's constitution to protect it against our wet weather and westerly gales.

Mr. HARVEY thought it wrong to shear lambs all over their bodies, the wool should certainly be left on certain parts needing protection from the cold, such as the abdomen. He found a great fatality among sheep due to the presence of the *Strongylus contortus* in the abomasum, and for which he found common salts a good remedy.

Mr. HAMMOND mentioned that the Scotch farmers were unable to keep their sheep on the hills during the whole of the year; their custom was to move them south for a time. And the lambs were never shorn until a year old.

A very hearty and unanimous vote of thanks was accorded to the President for his excellent and practical paper. After replying to the vote of thanks, the PRESIDENT said he hoped that all the members of the association would do him the favour of dining with him at his house in Exeter at the annual meeting in March.

The members then sat down to an excellent dinner, and an enjoyable evening was spent.

W. PENHALE, *Hon. Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

A MEETING of this Society was held on October 24th, in the London Hotel, Edinburgh, the President, C. Cunningham, Esq., in the chair.

There was an excellent attendance of members and friends, and letters of apology for non-attendance were received from Messrs. Thompson, Aspatria; Donald, Wigtown; and Cameron, Berwick-on-Tweed.

The following gentlemen were admitted to membership: Messrs. James

Borthwick, M.R.C.V.S., Kirkliston; H. Thompson, M.R.C.V.S., Aspatria; J. Black, M.R.C.V.S., Howgate; J. Brown, M.R.C.V.S., West Calder.

The following gentlemen were nominated for membership: Messrs. J. Cameron, M.R.C.V.S., Berwick-on-Tweed; P. Manuel, M.R.C.V.S., Hawick; Bates, M.R.C.V.S., Edinburgh; Professor Irison Macadam, Edinburgh.

It was proposed by Professor WILLIAMS, and agreed to, that the office-bearers be re-elected. These are—President, C. Cunningham, Esq. Vice-Presidents, Prof. Williams, Edinburgh; J. Borthwick, Esq., Kirkliston; W. D. Connochie, Esq., Selkirk. Hon. Secretary and Treasurer, R. Rutherford, Edinburgh.

It was decided to hold the annual meeting and dinner about the middle of February next.

Mr. STORRIE, East Linton, then read the following paper on "The Measures to be Adopted for the Eradication of Bovine Tuberculosis:"—

A quarter of a century ago Tubercle excited little or no attention, and it is only within the last few years that public interest has been aroused.

It is not our country, however, which can lay claim to the honour of having first taken serious steps in regard to the elucidation of the subject, the principal experiments and researches having been made by foreigners.

France, as usual, is to the front. During the last summer an important Veterinary and Medical Congress was held at Paris, where the disease was thoroughly discussed, and measures proposed for its extirpation. Were some such meetings held in this country, where those connected with our profession might state their experience of the malady, it would tend to throw further light on the subject; and better still, if the members of the medical profession would also add their voices and give their assistance, as they are not only as much interested as we are, but have every opportunity of making important discoveries in regard to the progress of the disease in the human subject. I intend to give you the history of an outbreak which came under my notice some three years ago, in a herd principally composed of pedigree shorthorns.

One morning early in March, I was called in to examine a bull named Strawberry Grower. The cattle-man had noticed the day previous, and also that morning, that he was dull, and not so keen as usual when he was serving a cow named Peach Blossom and another named Ethel, and that he had a sore penis. I was also informed that a two-year old quey (Laura) seemed amiss; she had been served eleven days previously. She kept constantly whisking her tail, and evinced pain when she micturated. On going to the farm I made a minute examination of the herd, and found two bulls (Strawberry Grower and Randolph), three cows (Peach Blossom, Ethel, and Lady Hopeful), and two heifers (Laura and an Ayrshire) all suffering from an affection of the generative organs.

There was a good deal of constitutional disturbance, very quick pulse, and poor appetite in the two heifers. The breathing was very much accelerated; the mucous membrane of the vagina in the cows and of the penis in the bulls was covered with red spots.

A mild dose of salts was given to each, and a lotion of belladonna and acetate of lead was applied to the inflamed parts. At this time I had to leave home for four days. On my return I found both heifers had died, and had been buried. I regretted this very much, as a *post-mortem* would have been of great service in helping me to form a correct diagnosis of the malady. I learned they had presented all the symptoms of acute Metritis. Nothing more went wrong for a week or so, when two cows, Grace and Lady Leander, and a yearling bull in the herd, and four cows belonging to farmers in the neighbourhood which had been sent in to the bulls, showed the same symptoms. A few days after this the two cows first-mentioned, Peach Blossom and Ethel, presented the symptoms ten and eleven days respectively, after having connection with the bull Strawberry Grower.

At this time seven cows and three bulls on the farm were affected, and four cows belonging to outsiders.

All these were treated in the same manner, with a beneficial result, with the exception of Lady Hopeful ; there was no improvement in her case.

Tonics were then prescribed, and the application of silver-nitrate lotion to the affected parts, and in about three weeks all but Lady Hopeful seemed to have recovered.

At this time the owner was so anxious to have the services of Strawberry Grower, that in spite of all I could say, he began to use him again, with the result that in three or four days he was found to be worse than ever, and in nine and ten days respectively the two cows Lady Baird and Lady Georgina showed all the symptoms of the disease.

In this herd, then, there were twelve animals affected, three bulls and nine cows, of which there are only two alive at this time, Lady Georgina and Lady Leander.

It will perhaps be interesting to learn what became of these animals. We will take them in the order in which I have first noticed them.

Ethel had one calf to Strawberry Grower, after which she ceased to breed, was fed, and sold for food. The calf was reared and sold for breeding purposes.

Peach Blossom had one calf to Strawberry Grower, after which she ceased to breed, was fed, and sold for food. The calf was sold as a yearling to a neighbouring breeder, but I understand he was hardly ever used, as his penis was noticed to be in a diseased state.

Strawberry Grower and the cow Grace were fed and sold for food in a few months.

Lady Hopeful died seven months afterwards. The *post-mortem* appearances were extensive Tuberculosis of the uterus and lungs.

Laura died a few days after she was noticed affected; she had been in a pining state since she aborted about five months previous. I am inclined to think that this quey was at the root of all the mischief. She had been served by both Strawberry Grower and Randolph about a fortnight previous to my having been called in. The Ayrshire quey died about the same time as Laura, just ten days after having been served by Randolph.

Randolph was used for some months, and did well; he was then fed and sold.

The yearling bull was fed and sold.

Lady Leander had three calves, and is in calf again. All her calves have been sold for breeding purposes.

Lady Baird had twin calves, ceased to breed, was fed and sold. Both calves were sold for breeding purposes.

Lady Georgina has had three calves since ; two were sold for breeding purposes, and one heifer is still on the farm, has ceased to breed, and is being fed.

Of the four cows belonging to outsiders, two are still breeding and milking, the other two have been fed. I have now accounted for the whole lot.

Of the other cows in the herd, four or five have since died from Tuberculosis. They never had connection with the diseased bulls, and three of them had no blood connection to the herd, having been bought in.

Another cow had a calf to Strawberry Grower, which was a sickly object at birth; it only lived about a fortnight. It presented all the symptoms of Tuberculosis during life. Unfortunately, I could not get a *post-mortem* made.

In this outbreak I am satisfied you have examples of the disease being conveyed from one animal to another in the act of copulation. Firstly, in the case of the bull Strawberry Grower, probably from the quey Laura ;

secondly, from Strawberry Grower to Peach Blossom and other cows. Then you have an instance of its hereditary nature in the son of Peach Blossom and Strawberry Grower, which had the diseased penis. The sickly calf sired by Strawberry Grower which lived only a fortnight, we may safely set down as an instance of congenital Tuberculosis, and in the case of the cows that have died at different times between the date of the outbreak, and now you have examples of the disease being contagious.

Now all this occurred on a farm where sanitary arrangements were everything that could be desired, and where the feeding was faultless. Certainly poverty or badly ventilated buildings were no factors in this outbreak; the animals looked all that the keenest judge could wish, and there were many prizetakers in the lot.

I may take it for granted that all those present are convinced of the dangerous and grave nature of Tuberculosis. There seems little doubt that it can be conveyed from the lower animals to man by the ingestion of flesh and milk from tubercular animals, and it has been proved beyond doubt that it is transmissible from one animal to another through various channels.

Taking this into account, it is surely our duty as veterinarians to consider the best measures to be adopted in order to crush its ravages and for its eradication. In the first place it must be included in the Contagious Diseases (Animals) Act, so as to provide, firstly, for the slaughter of affected animals and the total destruction of the carcase; secondly, for the compensation of owners of the slaughtered animals; thirdly, for the thorough disinfecting and cleansing of the byres; and fourthly, I am strongly in favour of the branding and registering of herds in the case of pedigree and breeding stock, and for the branding of dairy and feeding stock.

These measures would necessarily require to be carried out by a fully qualified veterinary inspector.

The first of these could be carried out on the same lines as for Pleuro-pneumonia, with the exception that the carcase in every case should be totally destroyed.

Compensation.—I would propose that for one year the amount of compensation should be full meat or dairy value, no exception being taken to pedigree stock, as they are worse than worthless for breeding purposes; it would be an encouragement to owners to get rid of diseased stock. It might afterwards be reduced to three-fourths value.

Disinfection.—The premises where the diseased animal had been kept should be thoroughly cleansed and disinfected with some powerful agent, such as carbolic acid.

Branding and Registering.—I have great faith in a branding and registering measure. There would be a certain amount of difficulty in carrying it out, but we have that to contend with in all innovations of the kind. I would have two brands, one the primary or fatal brand, the other the secondary brand; the former signifying that the animal could not be removed or sold unless for slaughter at a public abbatoir, and that within a certain period; the latter signifying that the animal was under restriction for a time, and that it would always be recognised as having been in contact with a tubercular animal. For example, in an outbreak such as I have communicated to you every animal in the herd would be branded with the first-mentioned brand, and all calves born from the animals subsequently would be branded and included in the restrictions. Of course the brand would become known to meat-inspectors, and careful inspection of the carcase and internal organs would follow.

In the case of an outbreak where only one, or perhaps two animals were affected, the secondary brand would come into requisition. The animals would be inspected, say, at the end of three months, and if every-

thing was found satisfactory the restrictions could be removed, but, of course, the brand would remain. One of the advantages to be derived from this system would be that there would be no danger of animals branded "primary" being used for any but feeding purposes. In the case of the secondary brand the advantages to be gained would be many, especially in regard to dairy stock. A regular system of inspection of dairies would have to be instituted, and of course these "secondary" branded cows would claim special attention. By registering pedigree stock, families in which the disease was hereditary could be discovered and placed under the restrictions of the primary brand. I am quite aware that my remarks are incomplete and imperfect, but if I have made any suggestions which may lead others to follow up the subject I shall be satisfied.

In the course of a discussion which followed, Professor WILLIAMS stated that the question of branding was worthy of careful consideration. Practical experience had taught him that the disease was contagious, and it was desirable that the Government should recognise this at once, and take steps accordingly. It was spreading in a most alarming degree—for one case fifty years ago they had 100 now, and more. An attempt made some time ago in a leading article in a veterinary publication, the responsible editor of which was known to be chief adviser to the Privy Council, to throw ridicule on the theory that Tuberculosis was contagious, showed that they must bring considerable pressure to bear on the Government before they could get anything which would enable them to deal at all satisfactorily with the disease.

Professor LEWIS also stated that they could do nothing with Tuberculosis until it was classed amongst the contagious diseases.

Mr. RUTHERFORD said the matter of the paper was of the utmost importance to the country, and he would suggest that the discussion be continued at next meeting, when, it being the annual meeting, there would be a larger attendance, and when members would be better prepared to consider the subject in all its bearings. And the opportunity might not be an unfavourable one for bringing under review the section of the Departmental Committee's report which dealt with Tuberculosis. At the same time, he did not think that the subject of Tuberculosis would have received the attention it had lately done but for the hue and cry raised by the medical and veterinary professions. There was no doubt the disease was hereditary, and that to a greater extent than was generally supposed, and the chief adviser to the Privy Council was failing in his duty if he attempted to stand between them and a stringent measure for dealing with it. If it was hereditary the absence of a slaughtering recommendation, as in Pleuro, in the Departmental Report, would almost seem to point that legislation at present was for one class—the large cattle-breeder, who wished to export his stock—to have the country declared clean so far as Pleuro-pneumonia was concerned, but wished nothing said about Tuberculosis. In nine cases out of ten outbreaks could be traced to pedigree stock; and the reason that the report did not recommend slaughter in the case of Tuberculosis, was that it would wipe out a large proportion of some of the so-called pure-bred herds in the country.

Mr. HUNTER observed that they did not find that the spread of Tuberculosis was so rapid in man as in animals.

Mr. THOMSON, Aberdeen, also stated that the disease was prevalent to an alarming extent, and they were much in want of measures that would enable them satisfactorily to deal with it. He did not go so far as some in ordering the wholesale destruction of affected carcases, but still there was a danger in the disease, which was coming to be more fully recognised.

Principal W. O. WILLIAMS pointed out that it would be necessary, before continuing the discussion, to make certain as to what they would exactly call Tuberculosis. There were different forms of the disease, all certainly not

equally dangerous. He did not believe the horse was liable to contract the disease.

The CHAIRMAN then mentioned that he had been informed of a case where only after the water-supply had been changed did Tuberculosis disappear. Was the disease simply hereditary? Could bad food, water, air, or anything cause it? Ultimately it was agreed to resume the discussion at the annual meeting.

Mr. RUTHERFORD, Edinburgh, then read notes of two cases illustrative of "Some of the Obscurer Causes of Abdominal Pain in the Horse."

CASE I.

July 5th, 11 *p.m.*—Called to attend upon a horse, property of a coaching client. Found patient was an aged (ten years) grey gelding, who had that day made the journey out and in from the Forth Bridge (eighteen miles) as one of a four-house team, pulling a Highland coach holding about thirty passengers. Shortly after reaching the return terminus, at about 5 p.m., he was observed to be in pain, was got home, attended to by the stableman, and relieved for the time being.

The pain reappearing at 9 o'clock, and not yielding to the simple measures adopted, I was sent for.

The symptoms were those of Gastric Colic—abdominal tympany, arching of the back, severe paroxysms of pain, during which he would draw himself together, and get down, resting his head and chin in an extended fashion, patchy sweating, and, when on his legs, persistent scraping with one or other of his fore feet, and eructation of gas; visible mucous membranes highly coloured; pulse 90°.

He received a draught of Sp. Ammon. Arom. in warm water and oil, which shortly relieved him, and draughts were left, with instructions as to their use should the pain return.

July 6th, 11 *a.m.*—The horse had been tolerably quiet all night, only very occasionally being griped, which would be relieved by his getting rid of wind either by the mouth or anus. Since early in the morning he had not been down; the abdominal tympany is gone, but at intervals he rambles round his box, and has his moss litter all scraped into a great central heap. His mucous membranes are still high-coloured, and his pulse remains about 90°; bowels and kidneys acting freely.

He got no medicine, but was ordered to be kept comfortable, to have water in moderation, and a little mash if he would take it. His pulse and general condition led me to think there was something behind the Colic, so I saw him again in the evening. I was told he had been quiet all day, would drink a little, but eat nothing, standing in one position and place, afraid to move, and perspiring profusely over the near quarter, blowing and groaning on being handled. His near hock and fetlock were swollen and acutely sensitive. Rheumatism at once occurred to me, but I said nothing, as it was just possible he had knocked the limb in the first hours of his illness. Fomentations were, however, ordered, and kept up at intervals throughout the night.

July 7th.—The lameness has left the near hind-leg, and is now as pronounced in the off one. His general condition, however, is better; he eats a little, his bowels are acting well, and the pulse has fallen to 65.

My inquiries into his previous history at this stage was to the effect that he had been subject to attacks of violent lameness on one or other of the hind limbs, but that such, as a rule, lasted no time, and that mild attacks usually wore off on his being sent to exercise, his bowels and kidneys acting freely. No medicine was given, beyond a little nitre in his water. Thin mustard embrocation was applied to his hind legs from the thighs down. In the evening I saw him again, and found him very lame in *both* hind legs, moving with

great difficulty and pain, and with a tendency to do so on his toes. The limbs were fomented, well dried, and later on fresh mustard embrocation applied, and the nitre to be continued in his drinking-water.

July 8th.—Both hind legs are enormously swollen, from the hocks down, but the pain is all gone, and although he walks stiffly, he is not lame; his pulse is 52, and he is looking for food. His limbs were well fomented, carefully dried, dressed freely with flour, and then moderately bandaged. He was ordered to get gentle exercise at intervals, food whatever he would eat in moderation, and the nitre to be continued in his drinking-water.

I saw him again on the 9th and the 11th, on which latter day he was so well that I ordered him to receive his usual diet and exercise, and to go to work after a few days' rest to freshen him.

Up till this date, October 24th, he has had no further attack of his periodic lameness.

Case II.

July 22nd.—Called to attend a bay carriage horse (aged about twelve years) for Colic of an apparently ordinary type, for which he received a laxative and stimulant draught, with the desired effect.

July 30th.—Called again to same horse, and attended him at intervals up till a late hour of night for continuous colicky pains of a not very severe character, but serious, in my opinion, from the fact that none of the remedies employed gave him any remission of pain for any length of time. His mucous membranes were high-coloured, pulse quick and weak; he was restless, very full in the abdomen, notably bulging outward and downward, but not tympanitic, scraping with the fore feet at intervals. He did not lie down.

July 31st.—Found him decidedly easier in respect that he was not so restless. His bowels have been freely moved, but he still scrapes occasionally, and looks round at a long interval to his sides. He has no desire for food. In the evening he was apparently quite well again and inclined to eat, having taken about three-fourths of the mash given to him, and then lay down.

Aug. 1st.—I received a message early in the morning that he was again in severe pain. I attended him immediately, and found him standing in a propped position in his box, sweating over his body, pulseless at the jaw, visible mucous membranes blanched, and mouth, ears, and extremities deathly cold. My opinion being that there was lesion, in all probability, of the liver, from which he was dying, it would be useless to attempt treating him. Nevertheless, he was warmly hand-rubbed and clothed; mustard embrocation was applied to his limbs, and these afterwards warmly bandaged. He sipped water freely, and advantage was taken of this to give him Carb. Ammonia in it. At this time his head could not be raised to give him anything. In the forenoon I saw him again, and as it was delightfully warm in the sun, I had him brought outside and left there. He would get the sun's heat, and if he died he would not require drawing out of the stable. We found we could now raise his head without tumbling him over, and full advantage was taken of this to give him at intervals a fair quantity of milk and whisky.

Aug. 2nd.—To my surprise he showed signs of rallying. Submaxillary pulse is discernible, and there was a faint colouring of the mucous membranes. He nibbled a little grass. In other respects he is as on the previous day, and received the same treatment. For the next three days there was little or no difference in him, further than that there was a gradual return of the pulse, colour to the mucous membranes, and warmth to the limbs.

Aug. 6th.—His visible mucous membranes are as yellow as a guinea, his

hair stands on end, and as a pupil remarked, there is a yellowish tint over all his body. His pulse, however, was better, of more volume, he was altogether warmer, and had some inclination to eat and drink. This inclination increased, and his strength and condition improved very much under the treatment now adopted. He had mustard pretty thickly applied over the region of the liver at once, and I may here say that he did not again seem to require it. For diet he was allowed bran and oats damped, a mixture of grass and hay, and water *ad lib.* and frequently changed, with a little Carb. Ammonia in it. Thrice daily he received the following draught:—

Aloes, 30 grains.
Carb. Ammon., 1 dram.
Sp. Nit. Ether } a.a. 1 ounce.
Tr. Chiretta }
in a pint of water.

The yellowness of the mucous membranes began to lessen after the second day of its appearance, and his owner began to think he would again do his work. Although very much surprised, taken in, in fact, by the turn for the better he had taken, I could not forget the symptoms he presented a week previously, and I advised my friend not to be too sanguine about him, for I was not.

Aug. 13*th.*—On the evening of this day he was, for some reason or other, removed from his box into his old stall, where after eating his supper, he for the first time since August 1st lay down, and according to the statement of the night stableman, remained so all night.

Aug. 14*th.*—On being disturbed by the entrance of the stableman early in the morning, he got up, and in doing so was observed to make a blunder and as if about to go down again. Shortly afterwards, within a minute or two, in fact, he was observed to reel and fall against the side of the stall. A messenger was at once sent off for me, but by the time I arrived he was dead. I was told that from the time he rose until he fell and died, which latter he did in agony, not more than twenty minutes elapsed.

A *post-mortem* examination made the same forenoon revealed rupture of the liver, the organ itself being enormously enlarged, affected with fatty degeneration, and weighing 64 lbs.

The most interesting part of the *post-mortem* was the discovery that there had been a prior rupture of the organ of a date a few days prior, and doubtless of August 1st, the morning he was found pulseless, and with mucous membranes blanched. This rupture was between the liver and diaphragm, and marked by the existence of a considerable blood clot and attempts at adhesion (round the edge of the rupture) to the diaphragm.

Professor WILLIAMS described an unusual case of perforation of the stomach of the horse, the patient being one which had been under his treatment for some little time. The professor's opinion was that the perforation was caused by the action of the gastric juice.

Mr. CUNNINGHAM exhibited the larynx of a horse he had known for a number of years. During life this horse was troubled with an almost constant discharge of masticated food down his nostrils. The abnormality consisted in a very short epiglottis, furnished with a fold of mucous membrane like a hood.

With votes of thanks to the President for presiding, and to the introducers of subjects for discussion, a most excellent meeting was brought to a close.

R. RUTHERFORD, F.R.C.V.S., *Hon. Sec.*

THE CENTRAL VETERINARY MEDICAL SOCIETY.

THE first ordinary general meeting of the above Society for the present session was held at the First Aveuue Hotel, on the 1st ult.

Alfred Broad, Esq., the President of the Society, occupied the chair, and there were present thirty-seven Fellows and visitors. Letters of apology for non-attendance were received from a large number of gentlemen.

On the motion of Mr. MALVEY, seconded by Mr. SHEATHER, the minutes of the previous meeting were "taken as read."

Mr. FITZWILLIAM WRIGHT was nominated for Fellowship of the Society.

The SECRETARY announced that Mr. Frank S. Billings, of the University of Nebraska, had presented two books to the Society. He was instructed to thank the donor.

The PRESIDENT then gave his inaugural address as follows:—

Gentlemen,—I sincerely thank you for electing me to this post of honour; it is a mark of your favour which I greatly esteem, and it should be my endeavour to devote myself to the duties of the office to the best of my ability. Our presidential chair has of late been occupied by clever and capable men, and our Society has gone on prospering; last session was an especially successful one, both in regard to the attendance of Fellows and the interest of the subjects brought before us, so that we have a good example to follow and an excellent record to maintain.

The Central is one of the oldest of veterinary societies, and has, I am proud to say, always held a forward position among its compeers. From the number of its meetings we may fairly consider it the most active of them all, and although during late years we have, when arranging for the monthly meetings, laboured under the disadvantage of a tendency among our essay-writers to wander to other societies and to more public gatherings, we have still had a sufficiency of interesting papers to hear and discuss. Among the advantages claimed for our societies this discussion or intercommunication of thoughts has always occupied the first place, and it is an advantage that we have all felt at our meetings here. Another prominent one is the advantage of meeting and becoming acquainted with our fellow-practitioners. In this respect we are certainly successful. We have not so great an amount of conviviality as other associations, being only annually festive, but we can justly pride ourselves on the hearty good-feeling and concord which prevail amongst us.

It will be expected that I should inaugurate my appearance in the chair with a few words, and here lies my difficulty. Following good precedents, I should give you some original ideas or a comprehensive review of the advances of science as applied to the healing art, but this necessitates a close study of scientific and medical literature, which during the past few months I confess I have not indulged in. Our veterinary periodicals certainly give great evidence of our progress, and will well repay attentive study; any one taking up the numbers for the past six months only cannot fail to be struck with the amount of good work contained there, either in clever essays, brilliant theories, or records of novel and skilful surgery. There is an advance in scientific thought, in amount of research, and in thoroughness of work; still the number of contributors is not large; what is to be wished for is good work by a greater number.

The few words I intend to say this evening just express the ideas which have occurred to me while thinking over the subject of hobbies, the hobbies or recreative pursuits of professional men. The expression that a man "rides his hobby" was brought into use by the ancient "hobby-horse," the forerunner of the modern bicycle, but there is another traditionary saying of later date, to the effect that a man should have one business and one hobby;

it is in the sense here indicated that I use the word. It may be that many of us have no hobby of the kind, or that others have more than one. I contend that the dictum I have quoted is right in both points; it is well for a man to have a hobby, and well for him to have but one. Few words would be needed to prove the usefulness of a scope for one's thoughts and a pleasing occupation in hours of relaxation from ordinary employment; it is even less necessary to enlarge upon the comparative disadvantage of dividing attention between several accessory pursuits at one time if any practical result or profit is aimed at.

It may be asked, "Who looks for other advantage than amusement or recreation in a pursuit of this kind?" This criticism I will endeavour to answer in so far as the querist assumes that if a hobby is to be interesting and amusing it cannot at the same time be scientific and of practical utility.

These leisure-time amusements may be divided into two classes: sometimes they are closely connected with a man's professional work, at other times are in arts or sciences very remote. Many a distinguished member of the medical profession has shone in some department of the lighter arts. Men in our own body have drawn reflected lustre upon the profession by their skill in the same direction; other members of the profession have devoted part of their time to public service in their several towns; and we must remember that individual distinction in these several ways redounds indirectly to the advantage of the whole profession; there is nothing to be said against hobbies or pursuits of this class, and it will by many be thought beneficial to mind and body that the chosen recreation should be as diverse as possible from the normal study. Yet there is much to be said in favour of the opposite contention, and it is this view I wish to advocate. A study of some department of science closely allied to our work *may* be made a pleasure; it is certainly a duty to our profession; and thirdly, it is most advantageous; in other words, it brings reward both to those who follow it and, directly and indirectly, profit to the profession at large; the advantage may even spread in a wider circle, for it is possible for veterinary practitioners to elucidate facts which may assist both students of human medicine and the general public.

Were it not that to very many such work can be pleasant and a relaxation from business, one could not urge it to active practitioners; but it can be so. There is a pleasure in the acquisition of knowledge by one's own efforts, as is the case when original research is undertaken; there is pleasure in looking up and reading all that bears on the question at heart; and there is also the increased interest taken in one's regular duties when, as must frequently happen, the matter in hand is akin to the subject of the practitioner's special hobby, or when a better understanding of the case is arrived at through light thrown upon it by the study pursued in hours of leisure. We will suppose, for instance, that a man takes delight in a close study of bacteriology; can it be denied that great pleasure would be experienced by him if, by means of his research, a doubtful case were diagnosed or a novel fact discovered? Again, we may well suppose that great satisfaction would follow the successful application, in our art, of knowledge acquired by the study, for pleasure, of some department of human surgery or pathology. We may therefore argue that not only does the pursuit of some special knowledge prove pleasurable, but it even makes our routine work lighter and more pleasant.

I have said that study of this kind is a duty, and if it be true that a man should desire the advancement of his profession, it certainly is a duty owing to the profession that he should, at least at some portion of his career and according to his abilities, make it a labour of love to elucidate some of the problems of pathological science. This is within the power of every prac-

titioner; it is only required that he should recognise the duty and set his will to the task.

It will be and has been said that professors of human medicine have more leisure than we have, at least that in their ranks are many more men who have abundant opportunity for research and experiment; this is undoubtedly true, and much has thereby been accomplished, but yet veterinarians are not without opportunities; what has been done can be done again. Taking the subject of literature in view, has not some valuable work been accomplished by members of our profession? I need hardly particularise. We may be proud, too, of the fact that our own Society numbers among its Fellows several who have greatly distinguished themselves by applying their spare time to thought and investigation on subjects connected with our professional work. And work of this kind does, as I have said, bring its reward. It induces, first, self-satisfaction, and it draws the esteem and respect of professional brethren far and near. This may justly be considered worth striving for.

It has long been a general aspiration to raise the veterinary more towards a level with its sister profession, and by no means could this object be attained with greater facility than by individual effort in the direction I have endeavoured to point out. We may already congratulate ourselves that a considerable stride has been taken over the gap which separated us; the difference in intellectual attainments between the representative practitioners of each body has materially lessened, and it will continue to lessen if the standard of education required of intending students be efficient; according to the improvement in the general and scientific education of the recruits so will be the advancement of the profession.

Addressing Fellows of a veterinary medical society on the subject of professional hobbies, I might well draw attention to the work of Mr. Thomas Greaves; the formation and encouragement of such societies was a task of pleasure which he pursued with energy and with signal success. No member of our body so closely and widely identified himself with the work of forming and maintaining our societies as he did, and how greatly the profession has benefited from their establishment! Very much of the interesting work done by members of our body has been due to the instigation of the societies; they have formed so many centres throughout the country for encouraging scientific work and progress, and through the need of essays to be read, have directly incited such work.

We may say that societies such as this exist for the purpose of encouraging studies and work which appropriate the leisure hours of our members, or, as I may put it, our hobbies for the time; that here the ideas formed or results attained may be brought and exposed to the criticism and, it may be detailed, to the admiring applause of our fellow-professionals. In passing I will say that a society such us ours might well take up a hobby of its own, a subject such as the collective investigation of any particular disease, or any point bearing on the intercommunicability of disease between animals and man.

Our societies exist, as I have said, to encourage practical work, and if it is the duty of individual members to endeavour, in their turn, to bring matters of interest or the result of thought before the meetings, it is equally the duty of members as a body to assist the work of progression by regular attendance, by devoting attention to the subject under notice, not merely, do I mean, on the evening of discussion, but beforehand, and by freely stating the results of their experience, and those ideas on the point which will certainly follow its careful consideration.

In conclusion, gentlemen, I reiterate my thanks to you all for electing me to this office, and I trust you will give me your cordial co-operation in trying to make this session a busy and interestingly useful one.

Dr. FLEMING proposed a vote of thanks to Mr. Broad for his excellent address; this was seconded by Mr. WRAGG, and carried with acclamation.

The PRESIDENT having replied, the company adjourned for the annual dinner.

SIDNEY VILLAR, *Hon. Sec.*

ROYAL SCOTTISH VETERINARY ASSOCIATION.

A QUARTERLY meeting of this Society was held in the Library of the Royal Veterinary College, Edinburgh, on the 3rd October, 1888.

The President (Professor Walley) occupied the chair. The following members were present: Messrs. Campbell, Burnett, McFarlane, Fingzies, Reid, senr., Reid, junr., A. Baird, H. Hunter, Gilchrist, Grossart, Player, Scrymegour, Young, Fairbairn, Professor Baird, and Professor McFadyean.

Major Wood, Mr. Pottie, Paisley; Mr. Gillespie, and Mr. Glover, Army Veterinary Department.

Messrs. Bennett, McFarlane, Manuel, Martin, Whyte, and Tibaldi were present as visitors.

The minutes of the previous meeting having been confirmed, the following gentlemen were elected members of the Society:—

Mr. Galloway, Perth, proposed by Professor WALLEY, seconded by Mr. MCFARLANE.

Mr. T. Dollar and Mr. W. W. Dollar, London, proposed by Mr. BAIRD, seconded by Mr. BURNETT.

On the motion of Mr. A. BAIRD, it was agreed to hold the annual meeting in October.

The PRESIDENT then opened a discussion upon the report of the Departmental Committee on Pleuro-pneumonia and Tuberculosis. He said that he was more than pleased with the report for reasons which he had already referred to, but he thought that some opinions expressed in that part of it which dealt with Tuberculosis were rather a slur upon the diagnosing abilities of the veterinary profession. He thought that veterinary surgeons were as capable as, and in some instances more capable, than their more favoured brethren of the medical profession. The statement he objected to was to the effect that there should be no difficulty in diagnosing cases of Tuberculosis. Every veterinary surgeon who had to do with Tuberculosis or Pleuro-pneumonia would know that there were numerous cases where no man could possibly say this was Tuberculosis or this was Pleuro-pneumonia. He himself had met with dozens of cases of that kind, where he could not decide which disease the subject was suffering from.

Mr. CAMPBELL (Kirkcudbright) contended that junior members of the profession knew more about morbid anatomy than the members of the medical profession, and that junior veterinary surgeons would make better inspectors of meat markets than medical men could. At the same time, he thought the work of the Committee had been crowned with success, and the Association should be highly pleased with the report.

Mr. POTTIE (Paisley) stated that Tuberculosis in its early stages could be mistaken for a great number of chest complaints. It was very widespread, and was gradually increasing. In his district there were large breeders of cattle, and he found that infected animals were sold in a great number of cases for human food. One of the animals that had come under his notice was in perfectly good condition, and yet a great number of tubercles were found in it. If it were a fact that the disease was communicable to the human subject, then the sooner those carcases were destroyed the better. He was one of those belonging to the old school, who believed that the disease was not communicable from animals to man. One thing, he thought, that would do more to stamp out the disease than any other would be the discontinuance

of the practice of breeding from animals that were known to be diseased. He found that persons who kept superior Ayrshire stocks, bred almost invariably with an animal whether it was infected or not, and the consequence was that in the second or third generation a vast number of the animals were tuberculosed. For the purpose of inspection the very best veterinary surgeon ought, in his opinion, to be employed.

Mr. H. HUNTER declared that the disease in the animals was usually so far advanced when the veterinary surgeon saw them that there was not much difficulty in diagnosing the cases.

Mr. CAMPBELL moved to the effect that the clause in the report referred to by the Chairman should have the serious attention of the Society; and that, with this object, and having in view the probable desirability of making a representation to the Government, further consideration of the subject be delayed till next meeting.

This was unanimously adopted.

A number of interesting exhibits were made by some of the members, among them being a case of Tuberculosis from a Clydesdale mare, which occurred in the practice of Mr. Campbell (Kirkcudbright). Commenting on this case, Professor MCFADYEAN said that, so far as he was aware, this was only the second instance in which the existence of the disease in horses had been recorded in Great Britain, though, looking at the circumstance that numerous cases had been brought to light on the Continent, it was hardly possible to suppose that these could be anything like the only cases that had existed. In cases of equine Tuberculosis the door seemed closed against the theory that infection had taken place, either through the lymph of a tuberculous cow, or through the eating of tuberculous flesh.

W. D. FAIRBAIRN, *Hon. Sec.*

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

THE ordinary meeting of the above Society was held in the Bush Hotel, Carlisle, on August 3rd. Mr. J. J. Bell, M.R.C.V.S., Carlisle, President of the Society, presided, and a fair number of members turned up.

Amongst the business was the nomination of Mr. R. Rutherford, F.R.C.V.S., Edinburgh, as a member.

The PRESIDENT also announced that he had received a most satisfactory reply from Mr. James Lowther, M.P., respecting the exemption of veterinary surgeons from the Horse Tax.

On the motion of Mr. JOHN ARMSTRONG, Penrith, a letter of condolence was agreed to be sent to the daughter of the late Mr. Harrison, M.R.C.V.S., of Warcop, Penrith, who was an old and esteemed member of the Society.

Dr. H. J. WEBB, B.Sc., Principal of the Agricultural College, Aspatria, then gave a lecture on "The Poisonous Plants of Great Britain," illustrating his remarks with specimens collected in the district.

POISONOUS PLANTS OF GREAT BRITAIN.

MR. CHAIRMAN AND GENTLEMEN,—The subject of my lecture this afternoon is one that I believe to be particularly interesting to the veterinary profession. For many years the poisonous plants of Great Britain have attracted my special attention, and recently a case of poisoning by water-hemlock, by which several valuable cattle were lost, suggested to me that a discourse on some of the most common and dangerous of British poisonous plants might be interesting to members of this Society.

To begin with, it may not seem at all clear to those who have not thought out the subject why plants are poisonous at all. Accustomed as many people are to the doctrine that all we see upon this earth was made for the especial benefit of man, it must be very puzzling to find plants so deadly that to

taste them means death to man and his domestic animals. The only explanation given in old times was that they must have been the work of the devil, for no one could imagine that aconite or the deadly nightshade grew in the Garden of Eden. Viewed in the light of modern science, the various poisons found in plants are regarded as so many means of self-protection. The hemlock is protected by its poison in the same way that a poisonous reptile is protected by its venom. We find in the keen struggle for existence that is always going on that unless a plant possesses some special quality, which enables it to contend successfully and survive the many dangers and difficulties that beset its life from its very first commencement, it would drop out of existence altogether.

The various plants we find growing wild in certain localities are the survivors in the great battle of life. They are the plants best suited to live under the special conditions of soil, climate, etc., that exist in that particular spot, and as a rule we should find that any artificially imported plant would be beaten out of existence and killed by the natives, unless protected by artificial means.

See the continual war waged against weeds by the farmer in order to protect his crops; how few of them would come to anything if it were not for this artificial protection. If a crop of wheat or turnips be sown and then left to fight it out with charlock and groundsel and other natural weeds, how many ears of wheat should we find at the end of five years time? Very few, I think. When you consider that besides the competition for board and lodging with its hardy competitors it will have to withstand the attacks of the various insects and fungi, the birds and browsing mammals, we may look upon the natural flora of a place as maintaining the balance of power between them. Though some exist in greater abundance than others, yet they all manage to struggle through the year, and successfully mature their seed for the next season. If the climate were to change or the soil become altered in some way, either by draining or through the addition of some special manure, then the balance of power would be disturbed for a time, and some genera of plants would be benefited, whilst others, perhaps, might disappear altogether. We will now proceed to consider what these special qualities are which thus enable the so-called weeds to compete so successfully.

Some owe their existence to their excessive powers of reproduction from the enormous number of seeds they are capable of bearing, so that, although many thousands perish, yet a few manage to ripen their seeds and scatter them by millions; others survive from their capacity to live where the generality of plants could not flourish, as, for example, the agaric and the cactus in the desert, the lichens and mosses on the bare rocks in the arctic regions, and, again, those plants which live constantly in the water.

Some plants boldly take up the most fertile spots, and defend themselves against their enemies by changing their leaves into prickles, as the thistles do, or their branches into thorns, like the hawthorn. The great natural enemies of the green plants are the browsing mammals, oxen, sheep, horses, elephants, and giraffes; hence many plants are covered with spines or thorns in order to protect their tender leaves. The bramble changes its hairs into hooked thorns; the stinging-nettle protects itself with sharp glandular hairs filled with formic acid. There are other plants also which are avoided because of their disagreeable odour and taste, such as most plants of the *Umbelliferæ* and many of the *Ranunculaceæ*. There are others which go a step further, and develop deadly poisons, although it must be confessed that as a rule these poisonous plants give warning to animals not to eat them by their disagreeable odour and unpleasant taste; consequently we generally find that animals poisoned by these plants are either young, foolish animals that want to take everything like babies, or they are driven to it by hunger. There is also the

possibility that the plant may be only just coming above the ground, and consequently the characteristic smell and taste may not be developed sufficiently to warn the animal.

I will now direct your attention to the specimens of poisonous plants we have before us, and the first we had better consider belong to the *N.O. Ranunculaceæ*, famous for the large number of its genera which contain poisonous species. The poisonous juices owe their active principles to various alkaloids, which are classed either as irritants, narcotics, or narcotic irritants; the common ranunculus or buttercup is an example of this order. It is to be noticed that, although most pasture fields are full of buttercups, cattle carefully avoid them. They contain an acrid juice, the chemical nature of which becomes changed on drying, so that they make good hay.

The various species of *Ranunculi* vary mmch in the virulence of their poison, but those which grow in marshes are the worst. There have been cases of horse-poisoning from eating them. By far the most virulent of the ranunculus plants is the aconite or monkshood, a plant cultivated very much in gardens. The stems rise about three feet; roots, two to four inches long, and tapering below, bearing a slight resemblance to horse-radish, for which it has been mistaken. The leaves are dark green and much divided; they have been taken for parsley. Every part of this plant is poisonous, the alkaloid obtained from it being called aconitia, the most powerful vegetable poison known, one-fiftieth part of a grain of pure aconitia being sufficient to kill a dog. On the other hand, this alkaloid is a very valuable medicine, and one might almost suppose Shakespeare was thinking of this plant when he says in "Romeo and Juliet"—

> "Within the infant rind of this small flower,
> Poison hath residence and medicine power."

The therapeutical action of this poison is to slow the heart-beat, and ultimately stop it altogether. It also paralyses the sensory nerve endings, so that it is used as a medicine in fever to lower the circulation, and in neuralgia to deaden pain.

The hellebore is another plant of this order that possesses poisonous properties. The most common poisonous plant in Great Britain is certainly the hemlock, belonging to the natural order *Umbelliferæ*. This plant, *Conium maculatum*, the spotted hemlock, grows on nearly all the hedge-sides in the north of England, and is also very common in the south. It is well known by its hollow stem with purple spots, and offensive mouse-like smell when any part is rubbed between the fingers. This is the plant some supposed to have furnished the poison for the great Greek philosopher, Socrates.

The fool's-parsley resembles the hemlock very much, but it has no spots on the stem, and the foliage is of a much brighter green and more divided.

It is extremely common; its takes its name from the resemblance of its young leaves to parsley. There are also two very poisonous plants of this order to which I wish to particularly direct your attention; one is the *Cicuta virosa*, or common cowbane, grows in ditches, with large leaves, leaflets lanceolate, and doubly serrated. The other is the *Oenanthe-crocata*, or the water-hemlock. I am of opinion that many cattle are poisoned by these plants, and it would be advisable for veterinary surgeons to become acquainted with their appearance. In a case that occurred this spring at Round Hill, in Cumberland, four cows died suddenly from causes that were not well explained, and Mr. Thompson, of Aspatria, suspecting a vegetable poison, brought over the stomachs of these animals for me to analyse the contents, and at the same time he asked me to examine the pastures. Upon doing so I found some young plants of *Oenanthe-crocata* growing in a ditch, some of which had evidently been eaten by the cattle. Upon analysing the contents of the

stomach, the alkaline poison *Conium* was detected, so that it was clearly shown that the animals had been poisoned by this plant, especially as upon removing the remaining animals from the field no more cases of poisoning occurred. This plant may be easily recognised by its peculiar roots, which distinctly resemble a bunch of long white radishes, but not quite so pointed. There are many other poisonous plants which I have only space to just mention, such as the *Atropa belladonna*, *Solanum nigrum*, and *Solanum dulcamara* (the common bitter-sweet), all belonging to the *Solanaceæ*. Among other plants very dangerous to cattle must be mentioned the yew and the rhododendron, along with various fungi, such as ergot of rye.

I shall now be glad to hear the experiences of any gentlemen present who have met with cases of poisoning.

Mr. THOMPSON, of Aspatria, opened the discussion by describing the cases at Roundhill. He said he was called in to consult with Mr. Little, of Abbey Town. The *post-mortem* revealed nothing particular, only that the lining membrane of the first three stomachs peeled off as easily as if it had been boiled, and the ingesta had a sour smell. The symptoms were : head elevated, wild, staring, glassy eyes, pupils dilated, singed-looking coat, sides flattened, belly pendulous, breathing slow and heavy, standing over on fetlocks, trembling and convulsions, and, as Dr. Webb had said, death was attributed to cowbane. Mr. Thompson also referred to some sheep being poisoned by eating the green leaves of foxglove when the ground was covered with snow, and to a case where two cows had died from eating rye-corn on the point of ripening, the animals showing all the symptoms of stomach or grass Staggers.

Mr. PEARS, of Penrith, described cases of sheep-poisoning from eating rhododendrons, when he had used charcoal successfully.

Mr. ARMSTRONG also described cases of rhododendron-poisoning.

Mr. DONALD, of Wigton, criticised Dr. Webb at some length, differing from the doctor on many points, and created a very instructive and interesting discussion.

Mr. HOWE, of Keswick, mentioned some cases where death was attributed to eating alsyke clover.

Mr. BELL, the President, proposed a vote of thanks to Dr. Webb for his valuable paper. He himself had often suspected vegetable-poisoning in some of his cases, but had no facts on which to base his conclusion. He agreed with Mr. Thompson that yew was more deadly when it had laid for some time, and he was pleased that such an instructive and useful lecture had been given during his Presidency.

In reply, Dr. WEBB said that many vegetable alkaloids were dissipated on drying, and rendered innocuous on account of the loss of water.

Mr. THOMPSON then exhibited the following specimens, and made observations on each: (1) A three-pronged thorn (each prong about six inches long, and attached to a common stem) which he had removed from the pharynx of a cart-horse, where it had been located for three weeks, while the horse had been in a registered practitioner's hands for Influenza, and had become quite emaciated. (2) An ordinary darning-needle taken from a cow's throat, where it had been for three days. (3) Large, overgrown last molar tooth, extracted from the lower jaw of a cow. (4) A stone found in the lining membrane of the œsophageal canal, at the entrance to the third stomach ; peculiar symptom, a continuous cough.

A lively discussion was entered into on all these subjects.

JOHN ARMSTRONG, *Hon. Secretary.*

THE last meeting of the Border Counties Veterinary Medical Society was held at the Bush Hotel, Carlisle, on the 26th of October.

The President, Mr. Bell, Carlisle, occupied the chair, and there were also present Professor Williams, Edinburgh; Mr. Greaves, Manchester; Mr. Rutherford, Edinburgh; Mr. Burnett, Maybole; Mr. Thompson, Aspatria; Mr. Carlisle, Carlisle; Mr. Carruthers, Brampton; Mr. Howe, Keswick; Mr. Little, Abbey Town; Mr. Crondace, Haltwhistle; Mr. Kendall, Barrow; Mr. Montgomery, Aspatria; Mr. Waugh, Seat Hill; Mr. Stephenson, Newcastle; Mr. Armstrong, Penrith (Secretary).

Several letters of apology were read.

Then the minutes of the previous meeting were read and confirmed.

The PRESIDENT proposed Mr. Rutherford, Edinburgh, as a member, seconded by Mr. HOWE, and carried unanimously.

Mr. THOMPSON proposed, and Mr. GREAVES seconded, that Mr. Faulder be elected an honorary member, and was carried unanimously.

The election of office-bearers was next proceeded with.

The PRESIDENT proposed that Mr. Donald, F.R.C.V.S., of Wigton, be elected President for the ensuing year. He said that Mr. Donald was one of the first to promote the formation of the Society, and had earned the honour of being our next President.

Mr. THOMPSON seconded, and said that Mr. Donald was first to suggest the Society's formation, and he had worked hard for it.—Carried unanimously.

Mr. Bell, Mr. Robson, Mr. McConnel, and Mr. Clough were elected Vice-Presidents. The Treasurer (Mr. Thompson) and the Secretary (Mr. Armstrong) were re-elected.

Mr. ARMSTRONG then gave notice that at the next meeting he would move that Rule 4 of the Society's rules be struck out.

A letter was then read by the PRESIDENT from Mr. Hunting, stating that through indisposition he was unable to be present, but had forwarded his paper by train.

Mr. BELL then read Mr. Hunting's paper.

"HEREDITY—ITS INFLUENCE ON CONFORMATION AND DISEASE."

It may have occurred to some of you that a practitioner from London was hardly the right sort of man to come to the Border Counties to read a paper on this subject.

You all have experience of animals from their birth upwards; you have personal knowledge of their parentage; you also are enabled to directly observe the similarities and variations in form between parent and offspring. I, on the contrary, have little knowledge of stock under four years old, and still less of the parentage. If my duty here were to afford you information, I should certainly be a pretender; but I assume no such office. The duty I shall attempt to fulfil is simply to open the discussion on a subject of special importance, and, just now, of prominent interest to our profession.

I shall attempt to arrange the subject for you; to be suggestive, and to draw from the store of observations you possess the facts and opinions so much wanted to form reliable knowledge on the transmission of disease from parent to offspring. I have no new facts for your consideration. I am going to theorise, but I venture to submit that in all pathological or physiological studies fact and theory are both necessary. Progress is made by a combination of inductive and deductive methods. Your facts and my generalisations may, if guided by the exercise of a little common sense, add something to our knowledge of the subject.

I see no reason to doubt that precisely the same laws are in operation in the transmission of disease, as in the propagation from parent to offspring of conformation, or those less tangible qualities or temper, action, manner and habit. If, then, we first refer to the general laws affecting heredity, we

shall be in a better position to consider the special subject of transmitted disease.

The great law is that "like begets like," the truth of which is daily evidenced in the reproduction of type by animals of all sorts of recognised breeds. The offspring resembles *both* parents, partaking more of less of the form and character of each. I say *more or less* because we do not find, in practice that the inherited characteristics are an exact average of those possessed by both parents. We do not, for instance, find that if one parent be sixteen hands high, and the other fourteen, that the offspring is fifteen hands; or that if one possess a smooth coat, and the other a curly one, that the progeny exhibit a coat just between the two.

There are certain influences to be considered, which modify the general law.

It is acknowledged that the longer the duration of a peculiarity in a breed, the greater the certainty of transmission.

That the male possesses a greater power of transmitting his peculiarities than the female.

That some parents—either male or female—possess a special power of impressing their peculiarities upon the progeny—this has been called prepotency.

That some animals, instead of showing a resemblance to their parents, show a greater resemblance to some more remote ancestor—atavism, or "throwing back."

There are other influences which affect the inheritance of peculiarities; such as age, food, work, and climate, which may increase or diminish the probabilities of like producing like, and there is one condition which increase them. It is stated by Darwin in these words: "When any peculiarity of structure or constitution is common to both parents, it is often transmitted to the offspring in an augmented degree."

Another general principle which may be accepted is that at whatever period of life a peculiarity first appears, it tends to reappear in the offspring at a corresponding age or earlier.

Now, bearing these facts in mind, the wonder is that all distinct breeds of animals should show any individual peculiarities. We might almost expect them to arrive, in course of time, at a regular pattern, presenting such slight variation as to be only detectible to the eye of an expert.

There are, however, other agencies at work as well as the master one, expressed in the words, "like begets like." The food, the climate, and other conditions of life, produce deviations in structure of animals, which are transmitted. When a variation renders an animal more fit for the surrounding conditions, it soon becomes more pronounced; and when careful selection favours that variation, it is sure to increase. The crossing of distinct varieties also gives rise to deviations.

In the care of our domestic animals, then, where we can absolutely control their increase, we have the power, if we only use it, either to vary or to intensify the structural conformation, or even the functional peculiarities of the individuals. In no part of the world is this better known than in this kingdom, where every one of our breeds of stock stands pre-eminent in those characteristics which render it most useful to man.

Unfortunately, not only have our animals inherited the valuable peculiarities of structure and constitution possessed by their ancestors, but they have, in a large degree, had transmitted to them some of their infirmities. If our practical breeders had recognised the fact earlier that some diseases were capable of transmission as certainly as definite forms of structure, we should now have had fewer unsound horses. An inherited disease does not obtain the same recognition as an inherited defect of form, for many reasons. It

does not appear at once—it only develops after the lapse of some years; and then may be credited solely to some direct exciting cause. Diseases, too, which only appear, as a rule, at four and five years old, may not appeal to a breeder's self-interest, as at that age he has frequently sold the animal, apparently sound, and all trace of its parentage becomes lost by the time defects appear.

It is impossible to discuss the question of hereditary disease, apart from the question of inherited make and shape. There are certain conditions of limb, which undoubtedly predispose to disease; as long pasterns to Sprain, certain hocks to Curb, flat feet to Laminitis, and dry horn to Sandcracks. We recognise also a light middle as leading to want of stamina, a long neck as often accompanied by Roaring, and even certain shades of colour as indicative of greater or less constitutional merits.

But a special conformation does not always co-exist with a definite defect or disease. If it did, the relation of cause and effect would be unmistakable. If we always found sickle-hocked horses with Curbs, and all Curbs on sickle-hocks, we should justly draw the inference that one was cause and the other effect. No such clear connection has yet been traced in any of the diseases we are inclined to classify as hereditary.

If we look over a list of them, we shall find that every one of the pathological conditions may arise under circumstances in which it is impossible to impute heredity as a cause, and not infrequently where a distinct exciting cause, of an extraneous nature, can be postively indicated.

An accidental slip may produce a "Curb," and "strangles" may give rise to Roaring in animals of the very best type of conformation, and possessing parentage of undoubted soundness. We require more facts to enable us to say what diseases are transmissible, and what conformations are likely to lead to serious defects.

That conformation is transmitted and that some diseases are inherited is beyond dispute. How are we to recognise these diseases? When it can be clearly demonstrated that a disease or defect is the result of accident, what reason is there to imagine it may be transmitted? We know that, as a rule, changes of structure due to accident are not transmitted; and there is abundant evidence that alterations of form, resulting from mutilation or injury, are seldom reproduced in the offspring. There are cases, however, in which the opposite obtains. Twisted horns, deformed legs, and blind eyes have been recorded in the offspring of parents suffering from similar defects due to injury. Against this may be put the cases of mutilation practised by some savage peoples for generations, with apparently no effect in producing hereditary deformity. In the lower animals, too, we may point to the "docking" of horses and "cropping" of dogs, repeated through generations, which fails to shorten the tails or ears of the produce of such animals.

Amongst our patients, if not in man, it seems to me that a distinction is to be made between mutilations which entirely remove a portion of the body, and those injuries (or diseases) which merely cause a change of structure. The former are practically never transmitted; the latter sometimes are. Possibly the explanation may lie in the fact of the injured or altered organism in one case remaining, whilst in the other it is removed.

Heredity, it has been said, depends upon the general principle that a vital tendency, once established in an animal, continues to run its course not only through that animal, but through its offspring, until deflected by some other cause more powerful; or the same idea may be expressed in other words, thus:—When an organism has adopted a certain line of action, all organisms derived from it tend to follow the same line until deflected. Why an acorn should give rise to an oak, or why equine spermatozoa produce a horse, whilst those of a sheep give rise to a sheep, we know not. We do know

however, that the "vital tendency" of each continues in its own course, and that that course is a repetition of the course run by its predecessor. The deflecting causes we know almost equally little about, but we recognise their existence and that, once in action, the deflection tends to become permanent.

It must not be lost sight of that the "vital tendency" exists in the ultimate cells that compose the tissues of the body, and that it is the state of these that gives rise to all inherited conditions. The cells of the body have each their own function, and in carrying it out exhibit a selective power. Fat cells take up and store fat; pigment cells take up and store pigment. Milk cells secrete milk, and all others—bone cells, muscle cells, etc.—have their special function, which is capable of increased or decreased activity.

No fact is more clearly established than that superior milking and fattening qualities are transmissible. Milk and fat are mere products, and the change induced in the organism which increases their production must be due to the special cells which produce or store them. By selection, then, we can modify the function of the cells of the body, we can increase their activity, and if it is not illogical to suppose that other causes may act deleteriously upon them and cause them to assume the opposite action, if one kind of cell can be acted upon, so can others. The cells of bone may become more or less active; the cells of muscle also may alter in their action, and thus we may have an excessive secretion of bone, or a modification in the action of muscle or nerve. The susceptibility to changes of function may be aggravated by local exciting causes, and thereby be increased, or they may not meet with the necessary exciting cause, and then their action ceases, or, at any rate, does not show any special activity.

If, for instance, fat cells possess an inherited tendency to functional activity, they can only fulfil their tendency when a good supply of food to produce fat be placed within the animal's reach.

If bone cells possess an inherited tendency to excessive formation of bone, their function may be still further excited by the strain of work to which the animal is put. Is it not probable that the inherited tendency in both these cases may be retarded or increased respectively by the supply of food or the effects of work?

This theory, if it be correct, has a direct relation to the hereditary production of good milkers, and also to heredity as a factor in the production of ossific deposits. Cells are the living, formative agents of animal tissues, and they alone can receive the impressions which give rise to functional or structural changes.

Only on such hypothesis can we understand how colour, courage, temper, and such like characteristics become inherited, as well as fattening and milking qualities, and also the more tangible peculiarities of body, head, or limbs.

An animal is a most complex object. Just as an army is made up of a collection of regiments, and these again of many individuals, so an animal body consists of groups of structures which are formed by an aggregation of cells.

The structure and tone of the army is in proportion to the structure and tone of the individuals forming it, and the structure and tone of an animal is in exact ratio to the condition of the cells of which it is constituted. The changes taking place in the unit are at all times important, though seldom very apparent until they, from their intensity or wide diffusion, produce marked effects upon an important part, or perhaps, upon the whole.

The study of the structure and function of the minute organisms of which animals are composed, was a few years ago looked upon as possessing more interest as a scientific study than value as practical work. Now we know that these investigations are absolutely essential to elucidate the problems of health and disease.

Clinical observation is as valuable as ever, but no disease can be understood if we *stop* at that point. When all our observations are made on the animal and its surroundings, we can only complete the investigation by the aid of the scientist, assisted by all the physical appliances at his command.

Facts and experiences relating to the healthy animal cannot be too carefully and widely collected by the practical observer, but he will never quite grasp their full significance without the aid of the scientific biologist and physiologist.

There is no finality in human knowledge, and only dreamers expect the time to arrive when the why and wherefore of any point in nature will be solved. Our duty is to go plodding on, collecting facts, eliminating errors, and striving for light and truth. Every fact recorded, every error corrected, is something added to human knowledge and progress, and no man amongst us is debarred, be his intelligence and opportunities ever so narrow, from experiencing the satisfaction of the feeling of "something attempted, something done," if he will only watch and note the events of his daily life.

Now, gentlemen, we come to the practical question of what diseases are transmissible by inheritance in the horse, and I hope the time I have occupied in preliminary considerations will not be found wasted.

There are a number of diseases which are generally accepted as being of a transmissible nature, and there are some as to which opinion is rather divided. In the present state of our knowledge it will perhaps be wisest to adopt a discreet scepticism, and make no attempt to classify them. I shall simply ask you to consider them seriatim. In doing so, it will be advisable not to confuse hereditary disease with congenital disease. In the one, an animal comes into the world with some peculiarity already developed, analogous to that distinguishing its parent. The repetition of peculiar marks; the deformities resembling changes of structure in the parent due to injury; in fact, all peculiarities developed before birth, are congenital. Hereditary disease, on the contrary, does not show at birth, but develops in time—what is transmitted is not disease, but a tendency to disease. The hereditary tendency may exist, but under certain favourable conditions never develop into disease. It is developed with greater certainty and rapidity when some extra exciting cause assists it—see, for instance, the effect of badly ventilated stables upon eyes, work upon hocks, and respiratory affections upon the larynx.

It is true the line of demarcation between congenital and hereditary disease is not very definite, but it exists, and I am inclined to class as not hereditary all those cases of animals being born blind from parents suffering from injured eyes.

Roaring.—That this disease is hereditary probably no one disputes, but it does not necessarily follow that a "Roaring" parent should always beget a foal which will develop "Roaring." As professional men, I hold our advice should always be that a horse or mare suffering from Roaring is unfit for breeding purposes, and this advice may be very positively relied on when either of the parents of such animals are also roarers. That Roaring may be induced in a horse with no hereditary tendency to it I am not prepared to deny, and it is possible that in such a case the disease might not be transmitted. This argument is no reason for a veterinary surgeon drawing any distinction in practice—the disease is so often hereditary and so serious that it should always determine rejection in a breeding animal. Of course, the owner of of an unsound animal can do as he pleases, and should he be able to afford proof of his animal's innocence, it might be right that individuals or bodies capable of affecting the horse's services should draw the veto placed upon him.

Broken Wind.—The late Professor Robertson taught that this disease was

to be classed as hereditary. I recognise it as sometimes a cause of sterility in mares—or perhaps it would be safer to say as sometimes co-existing with sterility; but I have no experience warranting our accepting it as due to any inherited tendency. We want more evidence.

Diseases of the Eye.—I consider "Cataract" to be hereditary, and also many conditions due to inflammatory action and accompanied by structural changes. Practically, when the outer layers of the eye become opaque, we can only guess the condition of the deeper structures, and a doubt should be given against the horse. Cataract, however small, and all blindness, should lead to veterinary rejection for breeding purposes. The onus of proof of non-transmissibility should rest on the owner.

Splints.—No disease is so positively influenced by heredity as this. Their symmetrical position on both legs, their frequent development without lameness, and their appearance at about the same age in offspring as in parent is strong evidence. Add to this the fact that nearly all our horses show them, that no indigenous breed in a new country does until crossed with European horses, and I think we have absolute proof of their nature. I am told that in the Argentine Republic Splints are accepted as evidence of English blood, and that the equine possessor of this little disease at once becomes of greater value. The majority of Splints are harmless, and therefore only in cases when their position, close to the knee, suggests danger should I notice them in a breeding animal, and then I should not reject unless lameness were also evident.

Spavin.—I think there is sufficient evidence of the influence of heredity in causing Spavins to warrant us in classing it as a dangerous hereditary disease, and in declining always to recognise a horse with them as fit for breeding purposes. When I say horse, I also include mares. I know no special form of hock more liable to Spavin than another, and therefore do not accept conformation as a factor in their production.

Curb.—I have no evidence as to hereditary tendency in this disease, nor do I consider it of such a serious nature as to warrant us in interfering with the use of either mares or stallions suffering from it. Mr. Banham quotes Dr. Shorthouse as saying, "Nine-tenths of the descendants of the famous horse Bird-catcher have a tendency to Curbs." This, it will be noticed, does not say that they *develop* Curbs, and may be only an opinion. You can hardly appreciate a *tendency* till you see its effects. We want more facts.

Windgalls.—I have no evidence of hereditary influence as a cause of this condition, and should certainly not object to an animal for breeding purposes because they were found on its legs.

Bog Spavins.—Not sufficient evidence to warrant their inclusion in hereditary diseases.

Thoroughpin.—Ditto.

Navicular Disease.—I think there is sufficient evidence to warrant us in concluding that heredity is a cause of this disease. I should object to the use of a stallion suffering from it. Professor Williams and Mr. Finlay Dun have both recorded facts in favour of this view.

Stringhalt.—My experience does not warrant me in classing this as hereditary, though there are one or two cases recorded very strongly suggestive that it may be.

Shivering.—Professor Williams records the case of a mare which suffered from "Shivering," and who had three or four colts, each of which became affected in the spine before the age of three years.

Epilepsy—Some forms of "megrims" in the horse are undoubtedly epileptic, and we therefore might assume, from analogy in other animals, that they might be influenced by heredity. We want facts, and I know of none.

Sidebone—With the exception of Splints, probably no unsoundness owes its prevalence so exclusively to heredity as Sidebone. It is the curse of big horses, and should be vigorously attacked by the rejection of all stud animals suffering from it.

Ringbone.—I consider Ringbone one of the very worst unsoundnesses met with in horses, but I am not prepared to admit that it is a transmissible disease. We require more facts to arrive at a positive conclusion.

Diseases of the Feet.—Narrow feet, wide feet, and flat feet are formations undoubtedly transmitted from parent to offspring. Qualities of horn, too, are transmitted to some degree. Unless disease be present, a veterinary surgeon has no right to class these conditions as unsoundness. He may call them hereditary conformations of an undesirable kind, but they are certainly not hereditary diseases. Mr. Banhan, in an very able and exhaustive essay on "Hereditary Disease in Farm Animals," refers to the conformation of feet, and quotes from Dr. Shorthouse a remark concerning "Knight of Kars," who had a club foot: "The horse begat twenty or thirty foals a year, and nearly all the foals had a club foot, and would not stand training and racing." This does not help us much—it is a case of congenital disease being transmitted, and I think there is more certainty of this than of one which arises as the result of hereditary tendency.

Sandcrack.—The existence of a Sandcrack in one foot is no evidence of a transmissible disease. If I found a horse with dry brittle hoofs and Sandcrack in more than one of them, I should consider the condition one of a clearly constitutional nature, and therefore hereditary.

Laminitis.—By this term we mean not only the acute disease, but also the structural changes of hoof produced by it. Mr. Oatway, at a meeting of the Central Veterinary Medical Society, related a case which seems to negative its transmissibility: "A horse named 'Dundee' had Laminitis so badly that he had to be lifted on his feet when a mare was brought to him; another horse named 'Billy Barlow' had it as badly. He knew many and had owned several of these horses' foals, and in no instance that he knew of had one been affected with Laminitis."

Grease.—At the same meeting, just alluded to, Messrs. Mulvey and Caton adduced independent evidence of cases of the transmission by a stallion of this disease. Until evidence of the opposite may be forthcoming, I shall accept hereditary influence as a cause of Grease.

Now, gentlemen, I ask you to reward me for my long journey by supplying a good discussion.

The PRESIDENT: I am simply re-echoing Mr. Hunting's words when I say that I hope the paper will have the effect of raising a good discussion. Mr. Hunting has covered a good deal of ground, though there are some things he has not touched upon that I should liked to have seen mentioned. He then invited the views of the gentlemen present.

Mr. GREAVES: Mr. President, and Gentlemen, I am afraid that any remarks I may make will lack practical knowledge. I am like my friend, Mr. Hunting, in a district where there is very little breeding, and I have had very little experience amongst colts and the breeding from various classes of animals; nevertheless, I have had a little. In the first place, I may say that the impression on my mind as to the conformation of horses is that colts take their conformation more after the male than the female, and the intellectual part or mind partakes more after the female. I remember that we shod a mare for many years, and she had the peculiarity of snatching her feet away from the smith when being shod. She would throw a smith on his face almost in a moment when he was shoeing her fore feet. Now, strange to say, I knew three or four of her colts that had the same peculiarity. Now, in reference to the earliest appearance of defective conforma-

tion, I am one of those who believe that it is in the act of copulation that the die is cast, whether it be in a roarer, or one with Spavin, or Sidebone, or whatever it be. I believe that the taint or strain, or whatever you may call it, is produced at the time of copulation. It may never be developed if circumstances do not aggravate it in after life, but it is certain to appear if the circumstances for its development are favourable. Last March we had in Manchester a paper on Roaring, and since then I have paid a good deal of attention to the subject. I have been in the habit of attending at the knackers and examining a large number of both roarers and non-roarers, light and heavy horses, and in every case where the muscles of the larynx had been blanched and wasted I found the recurrent nerve on that side was defective; not a particle of nervous influence had passed to that side of the larynx, and I believe it had been so from the earliest period of gestation. The nearest approach to the larynx would be six or eight inches, and I am of opinion that the nerve had never reached the larynx at any period of its life, but that the muscles of the larynx were in a perfect condition at the time of breathing, with the exception of the want of nervous influence. I found in the other cases, where there were no wasted powers, the recurrent nerve was perfect, perhaps as thick as a crow quill, and as strong as whipcord; but the other was as thin as thread, and it would break on the slightest tension. This is rather a new view on the cause of Roaring, and I am quite satisfied that there is no nonsense about it. I have seen it in, perhaps, ten or twelve cases as marked and clear as it can possibly be, and anyone that examines these cases of Roaring will very likely confirm what I have said, that it must have existed from the very earliest period of gestation. I came here for the purpose of hearing and learning all that I could—for at present we members of Council have the question to discuss in consequence of an application made to us by the Royal Agricultural Society to state definitely what we believe to be hereditary diseases—and I hope that we shall gain such an amount of knowledge as will be of benefit to breeders and agriculturists throughout the land. I think Mr. Hunting is right in the cases he has described. Roaring, Sidebone, Spavin, Curbs, and Cataract are all hereditary diseases.

Mr. YOUNG mentioned the fact of a stallion which was affected with Shivers, and the disease was transmitted to probably 90 per cent. of his progeny, and another horse which had navicular disease, and was a roarer also, and both diseases were largely transmitted to his foals; also two other horses which were roarers, and both produced a large percentage of roarers.

Mr. ARMSTRONG mentioned two or three horses which were subject to certain diseases, which were very largely transmitted to their progeny; also one horse which had a peculiarity in conformation, and this peculiarity was transmitted to the offspring in almost every case, and any one knowing the horse and coming across his progeny in the district always knew them.

Mr. CARRUTHERS mentioned the case of a Clydesdale stallion which suffered from laxation of the patella, and nearly 75 per cent. of his progeny suffered from the same disease.

Mr. STEPHENSON said that these gentlemen had given the very kind of information that the Council of the Royal College of Veterinary Surgeons want. It is not theory at all that is required; we want the very evidence we have heard to-day, and gentlemen who can prove that unsound horses transmit their disease to their progeny, or even where the progeny has a tendency to develop such diseases as soon as opportunity arises, should afford information. It is not a question of theory, what we believe or think; it is fact we want to be at.

Mr. BURNETT: We are much obliged to Mr. Hunting for his valuable paper. He agreed with him that milking and fattening properties were hereditary, if

the animals were not crossed by inferior blood. Sometimes heavy milkers developed Tuberculosis, and this is hereditary. It is one of the most fatal of cow diseases. I have often seen Shivering in colts of under two years old, and Splints and Spavins, and so on, all, I believe, owing to hereditary influence, also Curbs; Sickle-hocked horses have a strong tendency to throw Sickle-hocked progeny, and they develop Curbs on the slightest invitation.

Mr. HOWE made reference to a certain horse which suffered from disease and transmitted it to his progeny, but which never showed any signs of it till put to work.

Mr. RUTHERFORD: In my mind one can hardly exaggerate the importance of this subject. The Royal Agricultural Society have asked the Royal College of Veterinary Surgeons to take the matter up, and we may safely discuss it. Like our friend Mr. Hunting, I am also a town practitioner, and I certainly have not had the opportunity of country practitioners of watching individual circumstances, which will be of so much assistance to the Council in their inquiry, but it has been my lot to see the horses of a great many countries. I have been one of those veterinary surgeons who have travelled in different lands, and I have always been struck—and it came to me forcibly when hearing the paper—that in all these countries there was great relationship between the conformation and its soundness, and so breeders were very careful to use only sires which were the very best types of their kind. You are all well aware an Arab will not part with a mare, but if one shows any defect she is destroyed, and the pedigrees of their stallions are traced for a very long period. I once saw the pedigrees of three stallions which were traced back between 300 and 400 years. These were sent to the Viceroy of India, and they showed undoubtedly that there never had been an impure strain in the breed. It is marvellous the care taken of conformation, stamina, and other qualities which tend to make a good horse, and I think it is the want of this care in this country that has given rise to the anxiety now existing for facing the question. Any one who has commissions entrusted to him to secure good horses knows of the great difficulty experienced in finding a fair percentage of well-formed, sound horses, with good action and colour. Why is this? Is it not because in many instances the stallions are defective to begin with, and in the large majority of cases the mares were also defective? It was part of my duty while in India to proceed to Australia in connection with remount work, and I was struck with various signs of hereditary influence there. We found, too, in taking horses to India, where they faced new conditions, that the nearer the horse approached perfection or to being thoroughbred, the better he met the trying conditions of the country. I have never been able to keep apart hereditary tendency and conformation. I agree there to a large extent with Mr. Hunting. I think they go largely together. When in Melbourne I was asked, in conjunction with another gentleman, to inquire into the cause of a disease occurring in the colony, showing swelling in the head and lameness of the limbs, swelling of joints, etc. This disease became hereditary, and animals got by stallions affected in this way had a tendency to the disease, irrespective of climatic conditions. The principal causes were attributed to the fashion of breeding from colts which had been heavily trained when their bones were not fit to stand the wear and tear. These horses themselves had never arrived at maturity, and long before they were sent to the stud. The system of giving large prizes for very young horses caused them to put on very severe work to enable them to compete, and these horses being put to the stud at a very early age produced the illness in their progeny. I think this is so in this country too. There can be no doubt about Sidebone being, as Mr. Hunting says, hereditary, and this has no relationship to the formation of the foot. It is almost invariably associated with want of proper form of the feet. There the question comes

up again, "Is it the conformation that is hereditary? or is it not?" It is the conformation, I think. I think it is impossible to consider the matter of heredity without taking also into consideration conformation, climate, and the soil. They could scarcely be separated. There are a lot of diseases peculiar to this country which you do not see in Australia at all. The Australians (twenty years ago) were so particular in their choice of mares, and above all sound sires, it was exceedingly rare to come across a roarer. The disease is unknown among Arab horses, and I never saw a case; and out of 2,000 or 3,000 horses met with in Australia, I only saw two or three roarers.

Mr. THOMPSON: If the Council succeed in getting rid of all the diseases mentioned in the list, veterinary surgeons would have very little to do, because most horses had one or more of the diseases which it was intended to find a remedy for. Broken Wind was seldom seen in thoroughbred and carriage horses, but is comparatively common in cart-horses. Curb is certainly hereditary, and he gave instances, both of Curb and several other defects, being transmitted from sire to progeny. Side-bone is, I think, due more to bad shoeing than anything else; large shoes were put on, throwing all the work on the lateral cartilages, causing inflammation, from which the disease developed. Laminitis I have known in many horses, but I never saw it follow in their foals. I think the conformation of the sire descends to the offspring; and he instanced several well-known cases.

Mr. CARLISLE could not believe that Laminitis was hereditary; well-formed feet might be affected with inflammation from many causes. Shivers, he thought, was hereditary, and said that some horses would transmit it to half their progeny. There are many diseases classed in the paper which I cannot consider hereditary. He also asked Mr. Rutherford if he ever came across a case of navicular disease in the Arab breed.

Mr. RUTHERFORD: I never found such a case, although the horses have the kind of feet one would expect to find it in—long, narrow feet.

Mr. HOWE considered from what he had observed that the offspring of animals with Laminitis were more prone to have Laminitis than others, and you might feed them as carefully as you liked.

Professor WILLIAMS said that he agreed with Mr. Howe that there was a proneness or tendency in animals to have Laminitis whose sires or dams had had the disease previously, and he was of opinion that to go on breeding from such animals the disease became hereditary. The tendency is perhaps not so great from the sire as from the dam. In such cases there is certainly a predisposition to the disease, and it appears on the slightest cause. Bog Spavin and Stringhalt, Mr. Hunting says, require more evidence. It requires no more evidence, so far as my experience goes. Thoroughpin is also hereditary, and those of you who live in Scotland and have to do with Clydesdale horses, will very soon have that impressed upon you. There is no doubt about it, for the last fifteen or twenty years horses have been bred from all sorts of badly bred horses. Bog Spavin, Shivers, and Roaring are all hereditary. As I am on the committee of the Council to inquire into this matter, I don't think I should say much more now. I am going to listen to the evidence that is brought before them, and I trust the Council will feel it incumbent upon them to consult the whole body of the profession on this very important subject.

The PRESIDENT: I can only say that in the words made use of here, in respect to the breeding of horses, that "like begets like," I have seen some of the very best-looking horses and perfectly sound when examined get unsound stock, and instanced one such horse whose progeny had almost every disease that has been mentioned. I think if breeders had paid more attention to their mares we should have been in a better position to-day. Unfortunately, farmers consider anything good enough to breed from, and nearly all the diseases referred to are hereditary. He referred to a mare with Cataract which he

was called in to examine, and found that she had Cataract. He then examined the mother; she also had Cataract, and having a mare in his own possession out of the same mare, she was examined also and found to have Cataract, which proved it to be hereditary. I do not think that Laminitis has much hereditary tendency, and we should not hastily condemn all cases of Laminitis as such; but I think we can class all the other diseases mentioned as having hereditary tendencies; at all events, I would like to have a committee of this Society formed to prepare a list of what they considered to be hereditary diseases; and after some discussion, it was decided that the office-bearers of the Society form the committee to draw up the questions to be put to the members by circular, and that they be requested to return the same with their replies.

Mr. BELL then moved a vote of thanks to Mr. Hunting for his very able and excellent paper.

Mr. GREAVES said he had great pleasure in seconding the proposition, which was carried with applause.

Professor WILLIAMS proposed, and Mr. ARMSTRONG seconded, a vote of thanks to the Chairman, which was carried.

The CHAIRMAN having suitably replied, the meeting terminated, and the members dined together.

J. ARMSTRONG, *Hon. Sec.*

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE usual meeting was held within the Glasgow Veterinary College on October 2nd. The office-bearers for next year were elected: Mr. Weir, F.R.C.V.S., President; Mr. Tweedley, Glasgow, Secretary and Treasurer; Messrs. Houston, Blue, and Peddie.

Mr. ANDERSON, F.R.C.V.S., Glasgow, introduced the subject of "Hereditary Unsoundness," which provoked a profitable discussion, remarks being made by Professors McCall and McFadyean, and Messrs. Campbell, Kirkcudbright; Constable, Inchture; Briggs, Londonderry, and others.

Professor MCFADYEAN mentioned two cases, in which one of the animals may have been said to have no liver at all—a case of nutmeg liver; the other was Cirrhosis of the liver.

A vote of thanks to the President terminated an excellent meeting.

H. TWEEDLEY, *Secretary.*

ROYAL AGRICULTURAL SOCIETY.

At the Council meeting held on November 7th, Sir JOHN THOROLD stated that Professor Brown had presented the following report:—

Pleuro-pneumonia.

During the third quarter of the present year there were 119 fresh outbreaks of this disease reported in Great Britain. This shows a decrease on the returns for the preceding quarter, when there were 151, and a still greater decrease when compared with the corresponding quarter of 1887, when 172 outbreaks were reported. This decrease has been most marked in Scotland; in England the number of outbreaks has only fallen from eighty-seven in the second quarter of this year to seventy-nine in the third, whereas in Scotland the decrease has been from sixty-four to forty, or about a third less. According to the returns for the first four weeks of the present quarter, the disease is increasing in England, there having been thirty-five fresh outbreaks reported in that time, or nearly nine per week, while the average for the preceding thirteen weeks was only about six per week. The decrease in Scotland is not only continued during the past four weeks, but is even more

marked: there have been only five fresh outbreaks, or just over one a week, reported, while in the September quarter they numbered about three a week.

The recent increase of disease in England is due to a series of outbreaks which have occurred in the districts of Shepton Mallet, Wincanton, Yeovil, and Ilchester, in Somerset, and in the adjoining Gillingham district of Dorset, the whole of which are said to be traceable to an outbreak at Gillingham, caused by an infected cow taken from Balham about April or May last year. The number of cattle affected with Pleuro-pneumonia in England during the quarter ending September 29th was 268, as compared with 295 in the previous quarter; while in Scotland there were 133 cattle attacked, as compared with 217 in the preceding three months. In the four weeks ending October 27th, there were eighty-nine diseased cattle reported in England, and eight in Scotland.

The Pleuro-pneumonia Slaughter Order came into force on the 10th of March, 1888, but was not carried out actively by the local authorities until the beginning of April.

Between April 1st and June 30th there were eighty-seven fresh outbreaks reported in England, 295 cattle attacked, and 1,129 healthy cattle were slaughtered under the provisions of the Order.

In the next quarter, ending September 29th, there were seventy-nine outbreaks, 268 cattle attacked, and 1,219 healthy slaughtered, making a total of 166 outbreaks, 563 cattle attacked, and 2,348 slaughtered healthy.

In the West Riding, including the boroughs, Pleuro-pneumonia has very materially decreased this year. The outbreaks during the first nine months of 1888 are nineteen, compared with forty-nine for the same period of 1887. The cattle attacked were forty-six, compared with 151 in 1887. The healthy cattle slaughtered numbered 338, as compared with 107 last year.

In Scotland, in the quarter ending June 20th, there were sixty-four outbreaks, 217 cattle attacked, and 1,597 slaughtered healthy. In the following quarter, ended September 29th, there were forty outbreaks, 133 cattle attacked, and 736 slaughtered healthy.

The total for the six months ended September 29th was:—104 outbreaks, 350 cattle attacked, and 2,333 slaughtered healthy.

The grand total for Great Britain for the six months—April 1st to September 29th—was therefore:—

		Slaughtered.	
Outbreaks.		Diseased.	Healthy.
270	.. .. ..	913 ..	4,681

Anthrax.

There were only twenty-five outbreaks of this disease reported in Great Britain during the third quarter of this year, or about half the number reported in each of the two preceding quarters.

The number of animals attacked by this malady was forty-three, or less than half as many as were attacked in the three months ending June 30th, and only about a fourth of the number attacked in the first quarter of the year.

Swine Fever.

This disease is still prevalent throughout the greater part of England, also to some extent in parts of Wales, and in a few centres in Scotland.

During the September quarter there were 2,088 fresh outbreaks reported in Great Britain; 8,447 pigs were attacked by it. Of these, 3,882, or less than half, were killed, 3,671 died, 995 were said to have recovered, while no less than 420 diseased remained alive at the end of the quarter.

Future returns will probably show some decrease of this disease, as the season of the year has now arrived in which a diminution in the number of outbreaks has been noted in former years.

Since the last meeting of the Veterinary Committee, experiments have been carried on at the Royal Veterinary College with the view to ascertain if feeding swine on diluted Swine Fever virus would protect them from Swine Fever. The experiments have hitherto failed, chiefly, it would seem, on account of the experimental animal being infected before the inoculation has had time to produce any protective effect. This difficulty is insurmountable, because protective inoculation of any kind is not likely to be adopted until an outbreak has occurred, and at the moment of the detection of the disease. It may be taken as a fact that most of the swine in contact with the diseased one are infected. In these circumstances it is evident that inoculation will only be practised in swine which already have the disease in the incubative stage.

A report had been received from Mr. Edgar, one of the Society's provincial veterinary surgeons, of an outbreak of disease in lambs in Kent. It appeared from this report that the animals were affected with Bronchopneumonia, due to the presence of the parasite known as the *Strongylus filaria*. Mr. Edgar had advised the owner to shelter the animals with thatched hurdles, with a more generous diet, and a bi-weekly exposure of the animals to the fumes of chlorine gas.

Professor Brown having reported that the investigation into lung-worm in cattle and sheep sanctioned by the Council in August, 1886, had now been commenced, the committee recommended that a cheque for £50, being the amount of the grant authorised by the Council, be now drawn.

The Committee gave notice that at the next meeting of Council they would move for their annual grant of £500, of which £200 would be granted to the Royal Veterinary College. The Principal had undertaken to present, for publication in the Journal, a report on the investigations carried on at the College with the aid of the present year's grant.

On the motion for the adoption of this report, Mr. DENT said he wished to call the attention of the Council to the statement laid before them by Professor Brown. He (Mr. Dent) was not prepared to express any opinion as to what would be the ultimate result of the slaughtering system, but at the present time they saw that during the six months ending September 29th, 4,681 healthy animals had been slaughtered. They could not put the cost of each animal at less than £10, and the total sum therefore chargeable upon the rates of Great Britain amounted to £46,000, in addition to which there was the slaughter of 913 diseased animals. Speaking broadly, there had been a total charge of £60,000 upon the rates, besides the slaughter of 4,600 healthy animals in Great Britain, in one half year. This was a serious inroad into our herds and a heavy burden upon the rates. Speaking for the West Riding of Yorkshire, he thought it had not been shown that they had been able to make any impression upon the disease. They had carried out the slaughter orders, and in one case had slaughtered the whole of the animals in a herd, amounting to 100. He merely wished to call the attention of the Council to the very serious loss of the live stock, and the onerous charge upon the county rates.

Sir MATTHEW RIDLEY said he should like to state that in his own county of Northumberland they had carried out this policy of compulsory slaughter, and there was not a single person who did not feel the greatest satisfaction at the result.

Mr. JACOB WILSON concurred, and mentioned the fact that this result had been obtained at a cost equal to a rate of only the twentieth part of a penny in the pound.

Professor BROWN said he would merely state, in reference to Mr. Dent's estimate, that, from calculations made in a large number of cases, the loss on the diseased animals might be reckoned at £9 per head, and on the healthy at £6 per head. With reference to Mr. Dent's statement that in the West Riding of Yorkshire no impression had been made on the disease, from the returns they had it appeared that, contrary to the opinion held by Mr. Dent, Pleuro-pneumonia in the the boroughs had very materially decreased this year. On the general question it was very difficult to express any opinion as to the ultimate result of the Slaughter Order as now carried out. It was only during the last six months that any systematic attempt to stamp out the disease had been made. Some local authorities had stamped it out, others had allowed it to take its course. Considering that they were only applying the stamping-out system to a very limited degree, the results of the last six months were very satisfactory. If they could only reduce the disease to moderate proportions, he thought they might make a definite effort and get rid of it altogether.

Army Veterinary Department.

Gazette, October 30th.

Veterinary Surgeon, First Class, John Prosser Adams is placed on retired allowance. Dated 31st October.

Gazette, November 8th.

The following Veterinary Surgeons to be Veterinary Surgeons, First Class, ranking as Captains: Thomas A. Killick, John B. Savage.

Obituary.

IT is with much regret we are called upon to announce the death of Mr. Samuel Lewis Pallin, M.R.C.V.S., of the Army Veterinary Department, which occurred at his private residence, Flore Villa, Weedon, on November 3rd. The deceased had been an invalid for some time past, and his demise was not unexpected, although his loss, at the comparatively early age of forty, will be severely felt throughout the service, where he was respected and beloved by all who knew him. Mr. Pallin belonged to a well-known Irish family, being the second son of the late Mr. Daniel Pallin, of Little Forrest, Swords, county Dublin, and Newabbey, Kilcullen, county Kildare, and brother of Mr. William Pallin, M.R.C.V.S., late Army, and now of Athgarvan Lodge, Curragh; and D. C. Pallin, M.R.C.V.S., of the Army Veterinary Department. Deceased had seen considerable service prior to his connection with the Weedon Depôt, which he joined about two years ago. He was formerly attached to the 8th Hussars, and afterwards to the 18th Hussars; he went through the Egyptian campaign, and was present at the battle of Tel El Kebir. He leaves a widow and four young children—a son and three daughters. The funeral took place at Weedon with full military honours. The deceased graduated in 1869.

Intelligence has been received of the death of Mr. T. Chalwin at Adelaide, South Australia, on September 7th. Deceased, who was fifty-seven years of age, was a colonist of many years' standing, was one of the best known veterinary surgeons in the colony, and had a high reputation in his profession. He was a member and Hon. Associate of the Royal College of Veterinary

Surgeons, having graduated in 1879, though he obtained the Highland and Agricultural Society's Certificate so long ago as 1853; he was also Government Veterinary Surgeon, and Hon. Secretary of the Australasian Veterinary Medical Association, and had for many years been connected with the military forces in his professional capacity, having attained the rank of Lieutenant-Colonel by virtue of long service. According to a local paper, "he had been in bad health for some time, and his death was not altogether unexpected. He leaves a widow and family. The deceased gentleman, who was well-connected, was a native of England, and came to the colony more than thirty years ago. He was first employed at Yankalilla in connection with Government road-work, and also practised his profession as a veterinary surgeon; but he soon removed to Adelaide, where he speedily became well known in his professional capacity, and as a genial, hearty man. In 1882, he was closely associated with the Inspector of Stock when experiments were being made to procure lymph from cows for vaccination purposes, and he had charge of a number of cattle isolated near Hilton for the purpose. He has been Government Veterinary Surgeon for several years, and was sent up to Teetulpa when a disease similar to fever broke out amongst the horses in the North. While at Teetulpa he proved himself very efficient, and rendered good service there and elsewhere. Almost ever since his first arrival in Adelaide, he has been intimately associated with Messrs. Formby and Boase as a veterinary surgeon, and his services were very useful in connection with the selection of horses for the Indian market. He was assiduous in his attention to his duties as veterinary surgeon to the Defence Force. Being a thoroughly good theoretical man, he contributed largely to the medical literature in his particular line, and wrote a number of essays, besides delivering lectures for the Agricultural College. He was a member of the oldest Freemasons' Lodge in South Australia, viz., Friendship No. 1, but when General Owen opened the Military Lodge he joined that." Deceased received the honour of a military funeral.

The deaths are also reported of F. Cummins, M.R.C.V.S., Farnham, who graduated in 1866, and A. Gibson, Aberdeen, a holder of the Highland Society's Certificate since 1868, and M.R.C.V.S., in 1880.

Though not a member of the veterinary profession, Professor Tuson taught chemistry, materia medica, and toxicology for so many years at the Royal Veterinary College, and was in other ways so much identified in veterinary progress that the tidings of his death will be received with pain by the large number of pupils and friends whose regard he had won and maintained. He died on November 1st, aged fifty-six years, twenty-eight of which he had passed at the Camden Town School, the cause of death being Heart Disease. Mr. Tuson was a Fellow of the Chemical Institute and of the Chemical Society, and his reputation as a chemist was enhanced by the discovery he was fortunate in making, of the active principle of the castor-oil bean—*Ricinine;* while his professional knowledge enabled him to introduce certain disinfectants, deodorisers, and antiseptics—the most important of which is a solution of chloride of zinc impregnated with sulphurous acid gas—which are of much value. He contributed a good deal to chemical literature, and also wrote frequently to the *Veterinarian*, of which he was a co-editor for some years. He was the author of a Veterinary Pharmacopœia, which has passed through several editions.

This is the second loss by death which the Royal Veterinary College has sustained within twelve months.

Dr. Azary, of the Buda-Pesth Veterinary School, has died of Tuberculosis of the larynx, after two years' illness.

Professor Verhaar, of the Utrecht Veterinary School, has died recently; also Professor Munoz y Frau, Director of the Madrid Veterinary School.

Notes and News.

A New Microbe.—At a recent meeting of the Paris Academy of Sciences, Professor Verneuil presented, in the names of MM. Charles Richet and Héricourt, a note on a new microbe which they found in a non-ulcerated epithelial tumour at the necropsy of a dog that had just died. In its form and dimensions, its coloured reactions, and in the *ensemble* of its biological characters, this microbe resembles the *Staphylococcus pyosepticus*, analogous to the *Staphylococcus albus*.

Horses in Russia.—The annual report of the Russian Administration des Haras is to the effect that there are 21 millions of horses in the Empire, exclusive of Finland and the Caucasus. In the six State breeding establishments there were 81 stallions, 755 brood mares, and 1,607 young stock, while 470 animals were sold for a total of about £8,000. There are sixty-two racecourses in Russia, and the prizes run for on them amounted last year to about £70,000, of which a tenth part was contributed by the State. There were seventy-seven horse-shows held during the year, and 11,328 animals were exhibited at them, of which number 2,042 were sold. The total expenses of the Administration des Haras amounted to nearly £90,000.

Our Exports of Horses.—According to the official returns there were exported from this country 2,954 stallions, valued at £293,070, or nearly £100 each during the past nine months. Of the number exported, 1,671, or more than one-half, went to British North America, and 568 to the United States. There were 29 sent to Holland, 80 to Belgium, 25 to France, and 581 to other countries. During the past nine months there were exported from this country, 4,358 mares, valued at £250,011, averaging nearly £58 each. There were 780 to British North America, 651 to the United States, 457 to France, 668 to Belgium, 529 to Holland, and 1,273 to other countries.

An Unlucky Racehorse.—Friars Balsam, a racehorse that appeared to have a grand future, some months ago had his jaw injured by the bit, and was unable to run. A quack horse-dentist was called to remedy the damage, but evidently he was unsuccessful, for it was announced recently that: "An operation is to be performed on Friars Balsam's unfortunate jaw, and it will be carried out under the supervision of Mr. Bruce Clarke, lecturer on anatomy at St. Bartholomew's Hospital. It is thought that after the operation and a winter's rest the colt may get back to his old form again, and do good service for the Kingsclere stable in 1889.

Curious Death of a Hound.—Mr. Fetherstonhaugh Frampton, Master of the South Dorset Hounds, writes:—A curious accident happened to one of the best hounds of the pack, which ended fatally. The hound had a hard day, but fed well with the rest of the pack that evening; however, he showed signs of illness next day, and died. My kennel huntsman examined the stomach, and found a long brass rabbit wire (which I enclose), which had evidently been bolted with a leg of a rabbit, and was ultimately the cause of the hound's death.

Glanders among Persian Horses.—Among 121 horses landed in September in Calcutta from the Persian Gulf, four were found to be suffering from Glanders.

Agricultural Society of Victoria, Australia.—Mr. B. Owen Meek, M.R.C.V.S., has been appointed honorary veterinary surgeon to this society, in the place of Graham Mitchell, F.R.C.V.S., deceased.

The Dick Veterinary College.—In the report of the Edinburgh Corporation Accounts for 1887-88, published in *The Scotsman* of November 3rd, the account of Professor Dick's Trust shows that the realised revenue from trust properties was £546 1s. 6d., and from Veterinary College fees, £1,459 6s.—together, £2,005 7s. 6d.; while the expenditure was:—In the

maintenance and management of the trust estate, interest, and expenses connected with loans, £868 15s.; in the management and maintenance of the Veterinary College, £1,194 19s. 4d.; and capital expenditure (further for residue and succession duties, £1,590 11s. 7d.; and for works for enlargement and improvement of the College in Clyde Street, £4,704 6s. 10d.), £6,294 18s. 5d.—making the total expenditure £8,358 12s. 9d., exceeding the receipts by £6,353 5s. 3d., and thus increasing the balance against this account from £6,640 17s. 4d. (including a debt of £927 8s. 2d. due to Miss Dick's Trust) to £12,994 2s. 7d.

THE VETERINARY SURGEONS' ACT.—At the Westminster Police-court, on November 8th, Mr. F. H. Dale, 174, Brompton Road, was summoned by the Royal College of Veterinary Surgeons for falsely representing himself as a veterinary practitioner, and was fined ten shillings.

VETERINARY MEDICINE IN TURKEY.—An Imperial Irade has been issued for the establishment of a Veterinary School at Constantinople.

VETERINARY DISTINCTION.—We have much pleasure in noting that M. Darbot, Veterinary Surgeon and Mayor of Langres, France, has been elected a Senator in the Haute-Marne.

AN ASTOUNDING PHENOMENON.—The *Newbury Weekly News*, of October 25th has the following:—A Toad in a Horse's Windpipe.—Mr. Willis, of North Farm, last week lost a valuable cart colt from a most extraordinary cause. The colt had for a long time suffered very much from difficulty of breathing, and had been attended by Mr. Wilkius, F.R.V.C.S., who did all he could for the poor animal, even going to the extent of performing an operation on the throat to relieve the breathing, but all to no purpose, and the horse's suffering increased so much that it was a most pitiable sight to see it. Mr. Willis determined, therefore, to put an end to its misery by having the animal shot, which was accordingly done. Mr. Pavier cut up the carcase, and on severing the neck at the shoulders, to the astonishment of those present, a fairly sized toad was observed to crawl out from the opening in the windpipe, and the extraordinary cause of the poor animal's sufferings became at once apparent. The toad was almost red when extricated, but it has now assumed more its natural colour. It is now in the possession of Mr. Wilkins.

Correspondence.

QUACKERY AND IMPOSTURE.

SIR,—Upon reading Mr. Fitz-Eassie's letter in the VETERINARY JOURNAL for March last, it struck me that it was not only at home that veterinary surgeons went in for "Unprofessional Advertising," as the enclosed newspaper cutting will show. Beyond stating that instead of the advertisement reading, "I keep two professionals who are experts at worms," it should read, "two bagmen who travel to sell the nostrums," and that the whole thing is a "complete new idea," I will make no further comment. Would you inform me through the Journal if the advertiser is a F.R.C.V.S., as he states? One can hardly believe it. The foot-and-a-half of certain cures is enclosed.

CHARLES J. VYNER, M.R.C.V.S.,
Government Inspector of Stock.

Armidale, New South Wales, *August 31st.*

[The advertiser is not an F.R.C.V.S., indeed there is no one with the same Christian name in the list of Members of the Royal College.—ED. *V. J.*]

HIPPACEA.

SIR,—I wish to warn members of the profession against the tactics of "Henry's Great Indian Remedies Company." A gentleman styling himself

Dr. Seelig, B.A., called upon me a short time ago and left a tin of "Hippacea" for me to try, at the same time asked me to send them a few lines to say how I liked it. I have not sent any, nor do I intend to. A few days after the above gentleman called upon me the company sent to a chemist in the town about £7 worth of "Hippacea" and other quack nostrums, on sale or return. I suppose the move in calling upon me was to get me to speak in its favour, which, along with other testimonials, would soon have found its way amongst my clients. I see there are two gentlemen in the profession who have spoken in its favour. I fail to see how Mr. Pallin can reconcile the following remarks used in his testimonial:—"It seems a good application for recently fired surfaces, apparently encouraging the discharge, preventing irritation, and hastening the healing process." Mr. Mann strongly recommends it for wounds. I must say those who will use such stuff for a healthy wound are not followers of Lister. I think there is sufficient quackery going on at present, which certainly does not need a helping hand from the profession.

J. NETTELTON.

Northallerton.

PREPARED MEDICINES.

DEAR SIR,—Once again our attention is drawn to the discreditable method which some veterinary surgeons adopt to bring their names before the public. On the front page of the VETERINARY JOURNAL for July will be observed several testimonials praising the qualities of quack drugs, the sale of which is more or less detrimental to veterinary surgeons. Surely this is a poor way of gaining popularity. When we read of a V. S. ordering a nostrum for his own use it is evident he is too apathetic to prepare his own remedies, or that he is incompetent to do so.

"VERAX."

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from C. J. Vyner, Armidale, New South Wales; J. A. Nunn, A.V.D.; E. E. Bennett, A.V.D.; J. H. Steel, A.V.D.; E. Crookshank, London; G. R. Dudgeon, Sunderland; Messrs. Arnold and Sons, London; G. Snowball, Ballarat, Australia; H. Gray, London; J. Nettleton, Northallerton; S. Villars, Harrow; "Verax"; W. Penhale, Bideford; D. Pullin, A.V.D., Dorchester; W. D. Fairbairn, Cupar, Fife; A. W. Lawson, Falkirk; J. Armstrong, Penrith; E. Klein, London; A. W. Hill, London; Professor Brown, London.

BOOKS AND PAMPHLETS: *Sydney Galvanye*, The Horse; *C. G. B. Klophel, M.D.*, Tuberculosis, with Remarks on Some of its Manifestations and Treatment; Bulletin et Mémoires de la Société Centrale de Médecine Vétérinaire; Bericht über Thierarztlicher Verein von Elsass-Lothringen; *N. Lanzillotti Buonsanti*, Trattato di Tecrica e Terapeutica Chirurgica; *F. Roloff*, Handbuch der Gerichtlichen Thierheilkunde; *Professor Brown, C.B.*, Report on Eruptive Diseases of the Teats and Udders of Cows in Relation to Scarlet Fever in Man; *E. Cotterell, M.R.C.S.*, Roaring in Horses.

JOURNALS, ETC.: *Journal of the Royal Agricultural Society of England; Northampton Herald; Mark Lane Express; Archiv für Wissenschaftliche und Praktische Thierheilkunde; Der Hufschmied; American Veterinary Review; La Clinica Veterinaria; American Journal of Comparative Medicine and Surgery; Journal of the Royal Agricultural Society of Victoria; Wochenschrift für Thierheilkunde und Viehzucht; Revue Vétérinaire; Repertorium der Thierheilkunde; Russian Veterinary Journal; Annales de Médecine Vétérinaire; Recueil de Médecine Vétérinaire; Lancet; American Live Stock Journal; Edinburgh Medical Journal; Live Stock Journal; London Medical Record.*

NEWSPAPERS: *Dorset County Herald; Irish Times; Lahore Civil and Military Gazette; Scotsman; Newbury Weekly News.*

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